

Roadranger®

Eaton® Fuller®

Fault Code Charts



EATON

One Great Drivetrain from Two Great Companies

APMT-1234

February 2004



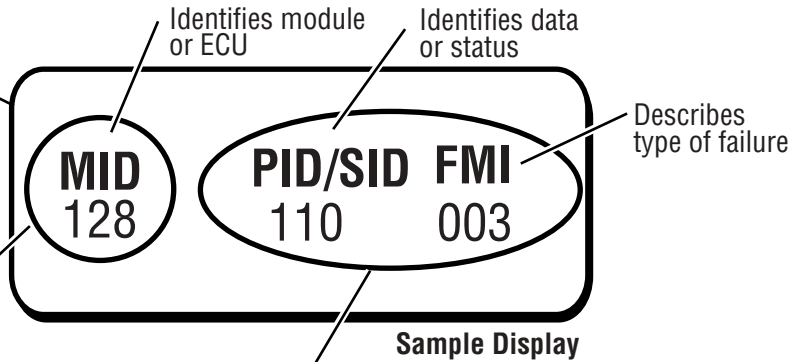
For the most current information, visit the Roadranger web site at www.roadranger.com

Please verify accuracy of fault codes with individual OEMs.

How To Use This Manual

1 Plug in tool and read display
See possible connectors on page 44

2 Use MID and your model/brand to find Fault Code Chart page number



3 Use PID/SID and FMI numbers to locate the Fault Code

MID 128 - Engine	Pg
CAT	2
Cummins	3
Detroit Diesel	8
International	12
Mack	16
MID 130 - Transmission	
Eaton AC-AS1	17
Eaton AS2-ASX	18
Eaton ASW	19
Eaton CEEMAT	20
Eaton CEMT	21
Eaton DM2	22
Eaton Lightning	23
Meritor FreedomLin	24
Meritor SureShift	25
MID 136 - Brakes (ABS)	
Bendix Tractor ABS	26
Eaton Tractor ABS	29
Wabco Pneumatic Tractor ABS	32
Wabco Hydraulic ABS	34
MID 137 - Trailer (ABS)	
Bendix Trailer ABS	35
Eaton Trailer ABS	37
Haldex Trailer ABS	39
Wabco Trailer ABS	41
MID 142 - Engine	
Mack	42
MID 158 - Engine	
Mack	42
MID 219 - VORAD	
Eaton VORAD	43

PID/SID	FMI	Fault Code	Fault Description
105	4	38	Intake Manifold Air Temperature Sensor Short Circuit
	11	64	Very High Intake Manifold Air Temp
108	3	26	Atmospheric Pressure Sensor Open Circuit
	4	26	Atmospheric Pressure Sensor Short Circuit
110	0	61	High Coolant Temperature Warning
	3	27	Coolant Temp Sensor Open Circuit
	4	27	Coolant Temp Sensor Short Circuit
	11	61	Very High Coolant Temperature
111	1	62	Low Coolant Level Warning

Sample Fault Code Chart

MID 128 - CAT
PID/SID - 110
FMI - 003
Fault Code - 27

MID 128 - CAT

CAT

PID/SID	FMI	Fault Code	Fault Description
1	11	72	Cylinder 1 Fault
2	11	72	Cylinder 2 Fault
3	11	73	Cylinder 3 Fault
4	11	73	Cylinder 4 Fault
5	11	74	Cylinder 5 Fault
6	11	74	Cylinder 6 Fault
22	13	42	Check Timing Sensor Calibration
30	8	29	Invalid PTO Throttle Signal
	13	29	PTO Throttle Sensor Calibration
41	3	21	Volt Supply Above Normal
	4	21	Volt Supply Below Normal
71	0	1	Idle Shutdown Override
	1	47	Idle Shutdown Occurrence
84	0	41	Vehicle Over speed Warning
	1	31	Loss of Vehicle Speed Signal
	2	36	Invalid Vehicle Speed Signal
	8	36	Vehicle Speed Out of Range
	10	36	Vehicle Speed Rate of Change
91	8	32	Invalid Throttle Signal
	13	28	Throttle Sensor Calibration
100	1	46	Low Oil Pressure Warning
	3	24	Oil Pressure Sensor Open Circuit
	4	24	Oil Pressure Sensor Short Circuit
	11	46	Very Low Oil Pressure
	102	0	25
3		25	Boost Pressure Sensor Open Circuit
4		25	Boost Pressure Sensor Short Circuit
13		42	Boost Pressure Sensor Calibration
105		0	64
	3	38	Intake Manifold Air Temp. Sensor Open Circuit

CAT (Continued)

PID/SID	FMI	Fault Code	Fault Description
105	4	38	Intake Manifold Air Temp. Sensor Short Circuit
	11	64	Very High Intake Manifold Air Temp
108	3	26	Atmospheric Press. Sensor Open Circuit
	4	26	Atmospheric Press. Sensor Short Circuit
110	0	61	High Coolant Temperature Warning
	3	27	Coolant Temp Sensor Open Circuit
	4	27	Coolant Temp Sensor Short Circuit
	11	61	Very High Coolant Temperature
111	1	62	Low Coolant Level Warning
	2	12	Coolant Level Sensor Fault
	11	62	Very Low Coolant Level
121	5	14	Retarder Solenoid Lo/Hi Open Circuit
	6	14	Retarder Solenoid Lo/Hi Short Circuit
122	5	14	Retarder Solenoid Med/Hi Open Circuit
	6	14	Retarder Solenoid Med/Hi Short Circuit
168	2	51	Low/Intermittent Battery Power to ECM
174	0	65	High Fuel Temperature Warning
	3	13	Fuel Temperature Sensor Open Circuit
	4	13	Fuel Temperature Sensor Short Circuit
190	0	35	Engine Over speed Warning
	2	34	Loss of Engine RPM Signal
228	3	19	A/C High Pressure Switch Open Circuit
231	11	58	J1939 Data Link Fault
232	3	21	Volt Supply Above Normal
	4	21	Volt Supply Below Normal
244	2	2	Event Recorder Data Lost
249	11	58	Power train Data Link Fault
252	11	59	Incorrect Engine Software
	12	59	Personality Module Fault
253	2	56	Check Customer or System Parameters
254	12	53	ECM Fault

MID 128 - Cummins

Cummins

PID/SID	FMI	Fault Code	Fault Description
1	6	311	Cylinder 1 Fault
		322	Cylinder 1 Fault
	7	1139	Injector Cylinder #1
2	6	315	Cylinder 2 Fault
		331	Cylinder 2 Fault
	7	1141	Injector Cylinder #2
3	6	313	Cylinder 3 Fault
		324	Cylinder 3 Fault
	7	1142	Injector Cylinder #3
4	6	321	Cylinder 4 Fault
		332	Cylinder 4 Fault
	7	1143	Injector Cylinder #4
5	6	312	Cylinder 5 Fault
		323	Cylinder 5 Fault
	7	1144	Injector Cylinder #5
6	6	314	Cylinder 6 Fault
		325	Cylinder 6 Fault
	7	1145	Injector Cylinder #6
9	11	768	Output Device Driver
15	1	583	Fuel Supply Pump Inlet Pressure Sensor
	3	581	Fuel Supply Pump Inlet Pressure Sensor
	4	582	Fuel Supply Pump Inlet Pressure Sensor
17	1	219	Low Oil Level
	2	472	Engine Oil Level #2
		473	Engine Oil Level #2
	4	254	Low Voltage Detected on Fuel Shutoff Solenoid
	7	259	Fuel Shutoff Valve
11	391	Fuel Shutoff Valve	
18	2	468	Fuel Rail Actuator Circuit
	3	276	Fuel Injection Control Valve
		455	Fuel Control Valve Circuit

Cummins (Continued)

PID/SID	FMI	Fault Code	Fault Description
18	4	279	Fuel Injection Control Valve
	5	378	Fueling Actuator #1
	6	379	Fueling Actuator #1
	7	277	Fuel Injection Control Valve
		514	Fuel Control Valve Circuit
	11	539	Injector Control Valve Electronic Filter
		2311	Fuel Control Valve #1
13	493	Fuel Pump Calibration Trim Circuit Error	
19	0	349	Transmission Output Shaft Speed
20	2	467	Timing Rail Actuator Circuit
	3	113	Engine Timing Actuator
	4	114	Engine Timing Actuator
	5	394	Timing Actuator #1
	6	395	Timing Actuator #1
	7	112	Engine Timing Actuator
	11	2312	Timing Actuator #1
22	0	555	Engine Blow by - Warning Level
	3	719	Crankcase Pressure Sensor
	4	729	Crankcase Pressure Sensor
23	6	172	Rack Position Sensor
	7	173	Rack Actuator
24	3	166	Rack Position Sensor
25	14	599	OEM Commanded Dual Output Shut-down
26	3	255	Externally Supplied Voltage at of the following: Fuel Shutoff Valve, Fan Clutch, Engine Brake
27	0	9122	Variable Geometry Turbocharger
	2	957	EGR Position Sensor Circuit
		1228	EGR Position Sensor Circuit
	3	2271	EGR Valve Position Sensor Circuit
		2277	Variable Geometry Turbocharger Actuator #1

Cummins (Continued)

PID/SID	FMI	Fault Code	Fault Description
27	3	2385	Variable Geometry Turbocharger
27	4	2272	EGR Valve Position Sensor Circuit
		2278	Variable Geometry Turbocharger Actuator #1
		2384	Variable Geometry Turbocharger
	5	2383	Variable Geometry Turbocharger
	6	2386	Variable Geometry Turbocharger
	7	2387	Variable Geometry Turbocharger
	13	2348	EGR Valve Position
		2388	Variable Geometry Turbocharger
29	2	288	SAE J1939 Data Link Remote Throttle Data
	3	133	Remote Accelerator Pedal Position Sensor
		133	Remote Accelerator Pedal Position Sensor
	4	134	Remote Accelerator Pedal Position Sensor
		134	Remote Accelerator Pedal Position Sensor
30	2	237	External Speed Input
32	4	466	Turbocharger #1 Wastgate Control Circuit
33	3	2181	Fan Clutch Output Device Driver
		2377	Fan Clutch Output Device Driver
	4	245	Clutch Fan Low Voltage
	11	389	Fan Clutch Circuit Error
39	3	584	Starter Relay Circuit
	4	585	Starter Relay Circuit
40	3	527	Auxiliary Input/Output #2
51	3	529	Auxiliary Input/Output #3
	11	779	Auxiliary Equipment Sensor Input #3
	14	2195	Auxiliary Equipment Sensor Input #3
57	3	2557	Auxiliary PWM Driver #1
	4	2558	Auxiliary PWM Driver #1

Cummins (Continued)

PID/SID	FMI	Fault Code	Fault Description
64	2	753	Engine Speed/Position #2
		778	Engine Speed Sensor #2
		2322	Engine Speed Sensor #2
	7	731	Engine Speed Sensor #2
70	3	2555	Inlet Air Heater Driver #1
	4	2556	Inlet Air Heater Driver #1
73	11	278	Fuel Priming Pump
78	3	316	Fuel Supply Pump Actuator
	7	318	Fuel Supply Pump Actuator
83	5	396	Fueling Actuator #2
	6	397	Fueling Actuator #2
84	2	241	Loss of Vehicle Speed Signal
	5	398	Timing Actuator #2
	6	399	Timing Actuator #2
	12	242	Invalid Vehicle Speed Signal
85	4	223	Engine Oil Burn Valve Solenoid
86	4	225	Engine Oil Burn Valve Solenoid
91	2	287	SAE J1939 Data Link Remote Accelerator Pedal
		431	No Voltage Detected at Idle Validation Switch
		551	Voltage Detected simultaneously at Idle Validation Switch
	3	131	High Voltage detected at Throttle Sensor
		515	Accelerator Pedal Position Sensor
	4	132	Low Voltage detected at Throttle Sensor
		516	Accelerator Pedal Position Sensor
	8	147	Accelerator Pedal Position Sensor
		148	Accelerator Pedal Position Sensor
	13	432	Voltage Detected at Idle Validation Switch
93	2	528	OEM Alternate Torque Validation Switch
94	0	449	Fuel Pressure High
		2216	Fuel Pump Deliver Pressure

Cummins (Continued)

PID/SID	FMI	Fault Code	Fault Description
94	1	482	Fuel Pressure Low
		2215	Fuel Pump Deliver Pressure
	2	268	Fuel Pressure Sensor
	3	546	Fuel Delivery Pressure Sensor
95	0	547	Fuel Delivery Pressure Sensor
		2372	Fuel Filter Restriction Moderately High - Warning
97	0	418	Water in Fuel Indicator
	3	428	Water in Fuel Indicator
	4	429	Water in Fuel Indicator
98	1	253	Engine Oil Level
		471	Engine Oil Level Low
	2	252	Engine Oil Level
100	1	143	Low Oil Pressure
		415	Low Oil Pressure Warning
	2	435	Engine Oil Pressure Sensor
	3	135	High Voltage detected at Oil Pressure Sensor
	4	141	Low Voltage detected at Oil Pressure Sensor
102	2	433	High Boost Pressure
		2973	Boost Pressure
	3	122	High Voltage Detected at Boost Pressure Sensor
	4	123	Low Voltage Detected at Boost Pressure Sensor
103	0	595	Turbocharger #1 High Speed
		595	Turbocharger Speed #1
	1	687	Turbocharger Speed #1
	10	2345	Turbocharger Speed Invalid
105	0	155	Intake Manifold Air Temperature Above 200 Deg. F
		488	Intake Manifold Air Temperature High
		2964	Intake Manifold #1 Temp

Cummins (Continued)

PID/SID	FMI	Fault Code	Fault Description
105	3	153	High Voltage Detected at Intake Manifold Air Temperature Sensor
	4	154	Low Voltage Detected at Intake Manifold Air Temperature Sensor
108	2	295	Ambient Air Pressure Sensor
	3	221	Atmospheric Pressure Sensor
	4	222	Atmospheric Pressure Sensor
109	1	233	Engine Coolant Pressure Sensor
	3	231	Engine Coolant Pressure Sensor
	4	232	Engine Coolant Pressure Sensor
110	0	151	Coolant Temperature Above 220 Deg F
		1119	Engine Coolant Temp
		2963	Engine Coolant Temp High
	3	144	High Voltage Detected at Coolant Temperature Sensor
	4	145	Low Voltage Detected at Coolant Temperature Sensor
111	1	197	Coolant Level
		235	Low Coolant Level Warning
	2	422	Very Low Coolant Level
	3	195	Coolant Level
	4	196	Coolant Level
112	0	1236	Water Pump Delta P
	1	1233	Water Pump Delta P
		1234	Water Pump Delta P
	2	1235	Water Pump Delta P
	3	1231	Water Pump Delta P
	4	1232	Water Pump Delta P
113	2	524	OEM Alternate Droop Switch
114	2	497	Multiple Unit Synchronization Switch Circuit
117	11	299	Engine Shut Down Commanded by J1939
121	4	243	Retarder Solenoid Low Voltage
126	3	272	High Fuel Pressure Solenoid Valve #1

Cummins (Continued)

PID/SID	FMI	Fault Code	Fault Description
126	4	271	High Fuel Pressure Solenoid Valve #1
	7	275	Fuel Pump Element #1
		281	High Fuel Pressure Solenoid Valve #1
127	3	274	High Fuel Pressure Solenoid Valve #2
	4	273	High Fuel Pressure Solenoid Valve #2
	7	282	High Fuel Pressure Solenoid Valve #2
129	0	485	Injector Metering Rail #2
	1	486	Injector Metering Rail #2
	3	483	Injector Metering Rail #2
	4	484	Injector Metering Rail #2
	7	758	Injector Metering Rail #2
135	3	118	Fuel Timing Pressure
	4	119	Fuel Timing Pressure
151	3	2355	System Diagnostic Code #1
	4	2356	System Diagnostic Code #1
	11	611	Engine Hot Shutdown
152	2	2554	System Diagnostic Code #2
	7	328	Fuel Pumping Element #2
154	3	293	Auxiliary Temperature Sensor Input #1
		527	Auxiliary Input/Output #2
	4	294	Auxiliary Temperature Sensor Input #1
155	3	2273	System Diagnostic Code #5
		2292	System Diagnostic Code #5
	4	2274	System Diagnostic Code #5
		2293	System Diagnostic Code #5
156	2	423	Fuel Timing Pressure
	3	116	Fuel Timing Pressure
	4	117	Fuel Timing Pressure
157	0	553	Injector Metering Rail #1 Pressure High
		2552	Injector Metering Rail #1 Pressure High
	2	554	Fuel Pressure Sensor
	3	451	Injector Metering Rail #1
	4	452	Injector Metering Rail #1

Cummins (Continued)

PID/SID	FMI	Fault Code	Fault Description	
157	7	755	Injector Metering Rail #1	
166	2	951	Cylinder Power Imbalance Between Cylinders	
167	0	596	Electrical Charging System	
		597	Electrical Charging System	
		598	Electrical Charging System	
168	0	442	High Battery Power to the ECM	
	1	441	Low or Intermittent Battery Power to the ECM	
171	3	249	Ambient Air Temp	
	4	256	Ambient Air Temp	
173	0	777	Turbocharger #1 Turbine Inlet Temperature high	
174	0	261	Fuel Temperature High	
	3	263	Fuel Temperature Sensor	
	4	265	Fuel Temperature Sensor	
	11	264	Fuel Temperature Sensor	
175	0	214	Oil Temperature Above 255 Deg F	
	3	212	High Voltage Detected at Oil Temperature Sensor	
	4	213	Low Voltage Detected at Oil Temperature Sensor	
190	0	234	Engine Speed Greater than 2630 RPM	
		2	115	Loss of Engine RPM Signal
			369	Fuel Pump Control Module
			689	Engine Speed
			2321	Engine Speed
	10	121	Engine Over speed Warning	
		11	367	Fuel Pump Control Module
191	1	489	Transmission Output Shaft Speed	
216	11	211	Additional OEM/Vehicle Diagnostic Codes Have been Logged	
221	3	283	Engine Speed/Position Sensor #1	
		387	Accelerator Pedal Position Sensor	
	4	284	Engine Speed/Position Sensor #1	

Cummins (Continued)

PID/SID	FMI	Fault Code	Fault Description
		443	Accelerator Pedal Position Sensor
221	11	496	Engine Speed/Position Sensor #2
223	3	293	Auxiliary Temperature Sensor Input #1
		297	Auxiliary Pressure Sensor Input #2
	4	294	Auxiliary Temperature Sensor Input #1
		298	Auxiliary Pressure Sensor Input #2
	11	2194	Auxiliary Equipment Sensor Input #2
	14	292	Auxiliary Temperature Sensor Input #1
296		Auxiliary Pressure Sensor Input #2	
230	2	431	No Voltage Detected at Idle Valid. Switch
	4	551	Voltage Detected simultaneously at Idle Validation Switch
	13	432	Voltage Detected at Idle Valid. Switch
231	2	185	Engine Control Module
		426	SAE J1939 Data Link
	9	285	SAE J1939 Data Link
	13	286	SAE J1939 Data Link
		427	SAE J1939 Data Link
232	1	444	OEM Sensor Supply Voltage
	3	227	Sensor Supply Voltage
		385	OEM Sensor Supply Voltage
		386	Sensor Supply Voltage #1
	4	187	Sensor Supply Voltage
		352	Volt Supply Below Normal
233	2	184	Engine Control Module
		366	Fuel Pump Control Module
	3	373	Fuel Pump Control Module
	4	365	Fuel Pump Control Module
	7	377	Fuel Pump Control Module
	9	364	Fuel Pump Control Module
	11	372	Fuel Pump Control Module
	12	374	Fuel Pump Control Module
	13	376	Fuel Pump Control Module

Cummins (Continued)

PID/SID	FMI	Fault Code	Fault Description	
233	14	329	Fuel System Leakage Error	
237	1	487	Start Assist Device Control Circuit	
	11	381	Intake Air Heater	
		382	Intake Air Heater	
		384	Start Assist Device Control Circuit	
250	2	412	SAE J1708 (J1587) Data Link	
	9	414	Data Comm. Error over J1587 Data Link	
251	2	319	Real Time Clock	
		434	Battery Voltage at AC Below Normal	
	3	361	Fuel Pump Control Module	
	4	362	Fuel Pump Control Module	
	7	363	Fuel Pump Control Module	
252	12	517	Fuel Metering Solenoid	
		2	1117	Power Supply
		253	2	341
253	12	346	Engine Control Module	
		13	342	Engine Control Module
		254	2	375
254	8	368	Fuel Pump Control Module	
		12	111	ECM Fault
	12	343	ECM Fault	
		351	Controller #1	
411	0	2359	System Diagnostic Code #1	
		2359	System Diagnostic Code #1	
		2273	System Diagnostic Code #5	
		2274	System Diagnostic Code #5	
412	0	2961	System Diagnostic Code #4	
		2962	System Diagnostic Code #4	
	3	2375	System Diagnostic Code #4	
		2376	System Diagnostic Code #4	
		441	3	293
441	4	294	Auxiliary Temperature Sensor Input #1	
		11	2197	OEM Temperature

MID 128 - Detroit Diesel

Detroit Diesel

PID/SID	FMI	Fault Code	Fault Description
1	0	61	Injector #1 Response Time Long
		71	Injector #1 Response Time Short
2	0	61	Injector #2 Response Time Long
		71	Injector #2 Response Time Short
3	0	61	Injector #3 Response Time Long
		71	Injector #3 Response Time Short
4	0	61	Injector #4 Response Time Long
		71	Injector #4 Response Time Short
5	0	61	Injector #5 Response Time Long
		71	Injector #5 Response Time Short
6	0	61	Injector #6 Response Time Long
		71	Injector #6 Response Time Short
7	0	61	Injector #7 Response Time Long
		71	Injector #7 Response Time Short
8	0	61	Injector #8 Response Time Long
		71	Injector #8 Response Time Short
9	0	61	Injector #9 Response Time Long
		71	Injector #9 Response Time Short
10	0	61	Injector #10 Response Time Long
		71	Injector #10 Response Time Short
11	0	61	Injector #11 Response Time Long
		71	Injector #11 Response Time Short
12	0	61	Injector #12 Response Time Long
		71	Injector #12 Response Time Short
13	0	61	Injector #13 Response Time Long
		71	Injector #13 Response Time Short
14	0	61	Injector #14 Response Time Long
		71	Injector #14 Response Time Short
15	0	61	Injector #15 Response Time Long
		71	Injector #15 Response Time Short
16	0	61	Injector #16 Response Time Long

Detroit Diesel (Continued)

PID/SID	FMI	Fault Code	Fault Description
16	0	71	Injector #16 Response Time Short
20	3	81	Dual Fuel BOI Input Voltage High
		82	Dual Fuel BOI Input Voltage Low
21	0	41	Too Many SRS (missing TRS)
	1	42	Too Few SRS (missing SRS)
25	11	26	Aux. Engine Shutdown #1 Input Active
26	3	62	Aux. Output #1 Short to Battery (+)
	4	62	Aux. Output #1 Open Circuit
	7	62	Aux. Output #1 Not Responding
40	3	62	Aux. Output #2 Short to Battery (+)
	4	62	Aux. Output #2 Open Circuit
	7	62	Aux. Output #2 Not Responding
47	0	61	Injector #17 Response Time Long
		71	Injector #17 Response Time Short
48	0	61	Injector #18 Response Time Long
		71	Injector #18 Response Time Short
49	0	61	Injector #19 Response Time Long
		71	Injector #19 Response Time Short
50	0	61	Injector #20 Response Time Long
		71	Injector #20 Response Time Short
51	0	65	Throttle Valve Position Above Normal Range
	1	65	Throttle Valve Position Below Normal Range
	3	17	Throttle Valve Input Voltage High
		31	Aux. Output #3 Open Circuit
	4	18	Throttle Valve Input Voltage Low
		31	Aux. Output #3 Short to Ground
	7	65	Throttle Valve Position Not Responding
52	0	44	Intercooler Temp. High
	3	14	Intercooler Sensor Input Voltage High
		31	Aux. Output #4 Open Circuit
	4	15	Intercooler Sensor Input Voltage Low

Detroit Diesel (Continued)

PID/SID	FMI	Fault Code	Fault Description
52	4	31	Aux. Output #4 Short to Ground
53	3	62	Aux. Output #5 Short to Battery (+)
	4	62	Aux. Output #5 Open Circuit
	7	62	Aux. Output #5 Not Responding
54	3	62	Aux. Output #6 Short to Battery (+)
	4	62	Aux. Output #6 Open Circuit
	7	62	Aux. Output #6 Not Responding
55	3	62	Aux. Output #7 Short to Battery (+)
	4	62	Aux. Output #7 Open Circuit
	7	62	Aux. Output #7 Not Responding
56	3	62	Aux. Output #8 Short to Battery (+)
	4	62	Aux. Output #8 Open Circuit
	7	62	Aux. Output #8 Not Responding
57	3	63	PWM Driver #1 Short to Battery
	4	63	PWM Driver #1 Open Circuit
58	3	63	PWM Driver #2 Short to Battery
	4	63	PWM Driver #2 Open Circuit
59	3	63	PWM Driver #3 Short to Battery
	4	63	PWM Driver #3 Open Circuit
60	3	63	PWM Driver #4 Short to Battery
	4	63	PWM Driver #4 Open Circuit
61	11	26	Aux. Engine Shutdown #2 Input Active
70	4	74	Optimized Idle Safety Loop Short to Ground
		72	Injector #21 Response Time Long
	3	17	Bypass Position Sensor Input Voltage High
		17	Bypass Position Sensor Input Voltage Low
73	0	61	Injector #22 Response Time Long
		71	Injector #22 Response Time Short
		83	External Pump Pressure High

Detroit Diesel (Continued)

PID/SID	FMI	Fault Code	Fault Description
73	3	86	Pump Pressure Sensor Input Voltage High
	4	87	Pump Pressure Sensor Input Voltage Low
74	0	61	Injector #23 Response Time Long
		71	Injector #23 Response Time Short
75	0	61	Injector #24 Response Time Long
		71	Injector #24 Response Time Short
76	0	66	Engine Knock Sensor Above Normal Range
	3	66	Engine Knock Sensor Input Voltage High
	4	66	Engine Knock Sensor Input Voltage Low
	7	66	Engine Knock Sensor Torque Reduction
77	0	73	Gas Valve Position Above Normal Ranger
	1	73	Gas Valve Position Below Normal Ranger
	3	73	Gas Valve Position Input Voltage High
	4	73	Gas Valve Position Input Voltage Low
84	0	72	Vehicle Over speed (fueled)
	11	72	Vehicle Over speed (Absolute)
	12	54	Vehicle Speed Sensor Failure
91	3	21	Throttle Position Sensor Input Voltage High
	4	22	Throttle Position Sensor Input Voltage Low
92	0	58	Torque Overload
94	0	47	Fuel Pressure High
	1	48	Fuel Pressure Low
	3	37	Fuel Pressure Sensor Input Voltage High
	4	38	Fuel Pressure Sensor Input Voltage Low
98	0	83	Oil Level High
	1	84	Oil Level Low
	3	81	Oil Level Sensor Input Voltage High
	4	82	Oil Level Sensor Input Voltage Low

Detroit Diesel (Continued)

PID/SID	FMI	Fault Code	Fault Description
100	1	45	Oil Pressure low
	3	35	Oil Pressure Input Sensor Voltage High
	4	36	Oil Pressure Input Sensor Voltage Low
101	0	83	Crankcase Pressure High
	1	84	Crankcase Pressure Low
	3	81	Crankcase Pressure Sensor Input Voltage High
	4	82	Crankcase Pressure Sensor Input Voltage Low
102	0	47	Turbo Boost Pressure High
	3	33	Turbo Boost Pressure Sensor Input Voltage High
	4	34	Turbo Boost Pressure Sensor Input Voltage Low
103	8	64	Turbo Speed Sensor Input Failure
105	0	44	Intake Air Temp. High
	3	27	Intake Air Temp. Sensor Input Voltage High
	4	28	Intake Air Temp. Sensor Input Voltage Low
106	0	47	Air Inlet Pressure High
	1	48	Air Inlet Pressure Low
	3	67	Air Inlet Pressure Sensor Input Voltage High
	4	67	Air Inlet Pressure Sensor Input Voltage Low
108	3	86	Baro. Pressure Sensor Input Voltage High
	4	87	Baro. Pressure Sensor Input Voltage Low
109	1	88	Coolant Pressure Low
	3	67	Coolant Pressure Sensor Input Voltage High
	4	67	Coolant Pressure Sensor Input Voltage Low
110	0	44	Coolant Temp. High
	1	43	Coolant Temp. Low

Detroit Diesel (Continued)

PID/SID	FMI	Fault Code	Fault Description
110	3	14	Coolant Temp. Sensor Input Voltage High
	4	15	Coolant Temp. Sensor Input Voltage Low
111	3	16	Coolant Level Sensor Input Voltage High
	4	13	Coolant Level Sensor Input Voltage Low
121	0	76	Engine Over speed with Engine Brakes
151	14	73	System Diagnostic Code #1 (ESS)
168	0	75	ECM Battery Voltage High
	1	46	ECM Battery Voltage Low
172	3	27	Air Temp. Sensor Input Voltage High
	4	28	Air Temp. Sensor Input Voltage High
173	0	83	Exhaust Temperature High
	3	83	Exhaust Temp. Pressure Sensor Input Voltage High
	4	83	Exhaust Temp. Pressure Sensor Input Voltage Low
174	3	23	Fuel Temp. Sensor Input Voltage High
	4	24	Fuel Temp. Sensor Input Voltage Low
175	0	44	Oil Temp. High
	3	14	Oil Temp. Sensor Input Voltage High
	4	15	Oil Temp. Sensor Input Voltage Low
187	3	12	VSG Sensor Input Voltage High
	4, 7	11	VSG Sensor Input Voltage Low
190	0	85	Engine Over speed
226	11	73	Transmission Neutral Switch (ESS)
227	2	73	Aux. Analog Input #1 Data Erratic (ESS)
	3	73	Aux. Analog Input #1 Voltage High (ESS)
	4	73	Aux. Analog Input #1 Voltage Low (ESS)
230	5	68	TPS Idle Validation Switch Open Circuit
	6	68	TPS Idle Validation Switch Short to Ground
238	3	32	SEL Short to Battery +
	4	32	SEL Open Circuit

Detroit Diesel (Continued)

PID/ SID	FMI	Fault Code	Fault Description
248	8	55	Proprietary Data Fault (master)
	9	55	Proprietary Data Fault (slave)
249	12	57	J1922 Data Link Fault
250	12	56	J1587 Data Link Fault
251	10	--	Clock Module Abnormal Rate
	13	--	Clock Module Fault
253	2	53	Non Volatile Memory Data Incorrect
	12	53	Non Volatile Memory Fault
	13	--	Incompatible Calibration Version
254	0	--	External Failed RAM
	1	--	Internal Failed RAM
	6	--	Entered Boot Via Switches
	12	52	ECM A/D Conversion Fail
289	3	32	CEL Short to Battery +
	4	32	CEL Open Circuit
-	-	25	No Active Codes

MID 128 - International

International

PID/SID	FMI	Fault Code	Fault Description
		111	No Errors Detected - Fault code only
1	4	431	Cylinder 1: High Side Shorted to Low Side
	5	421	Cylinder 1: High Side to Low Side Open
		571	Cylinder Balance limit exceeded
	6	451	Cylinder 1: High Side Shorted to Ground or VBAT
7	461	Cylinder 1: Cylinder Contribution Test Failed	
2	4	432	Cylinder 2: High Side Shorted to Low Side
	5	422	Cylinder 2: High Side to Low Side Open
		572	Cylinder Balance limit exceeded
	6	452	Cylinder 2: High Side Shorted to Ground or VBAT
7	462	Cylinder 2: Cylinder Contribution Test Failed	
3	4	433	Cylinder 3: High Side Shorted to Low Side
	5	423	Cylinder 3: High Side to Low Side Open
		573	Cylinder Balance limit exceeded
	6	453	Cylinder 3: High Side Shorted to Ground or VBAT
7	463	Cylinder 3: Cylinder Contribution Test Failed	
4	4	434	Cylinder 4: High Side Shorted to Low Side
	5	424	Cylinder 4: High Side to Low Side Open
		574	Cylinder Balance limit exceeded
	6	454	Cylinder 4: High Side Shorted to Ground or VBAT
7	464	Cylinder 4: Cylinder Contribution Test Failed	
5	4	435	Cylinder 5: High Side Shorted to Low Side
* - Indicates WARN ENGINE LAMP on when fault is set.			

International (Continued)

PID/SID	FMI	Fault Code	Fault Description
5	5	425	Cylinder 5: High Side to Low Side Open
		575	Cylinder Balance limit exceeded
	6	455	Cylinder 5: High Side Shorted to Ground or VBAT
7	465	Cylinder 5: Cylinder Contribution Test Failed	
6	4	436	Cylinder 6: High Side Shorted to Low Side
	5	426	Cylinder 6: High Side to Low Side Open
		576	Cylinder Balance limit exceeded
	6	456	Cylinder 6: High Side Shorted to Ground or VBAT
7	466	Cylinder 6: Cylinder Contribution Test Failed	
7	4	437	Cylinder 7: High Side Shorted to Low Side
	5	427	Cylinder 7: High Side to Low Side Open
		577	Cylinder Balance limit exceeded
6	457	Cylinder 7: High Side Shorted to Ground or VBAT	
7	467	Cylinder 7: Cylinder Contribution Test Failed	
8	4	438	Cylinder 8: High Side Shorted to Low Side
	5	428	Cylinder 8: High Side to Low Side Open
		578	Cylinder Balance limit exceeded
	6	458	Cylinder 8: High Side Shorted to Ground or VBAT
7	468	Cylinder 8: Cylinder Contribution Test Failed	
21	2	143	Incorrect number of CMP signal transitions per cam revolution
	7	612*	Incorrect ECM installed for CMP timing wheel
	8	144	CMP Signal Noise Detected
* - Indicates WARN ENGINE LAMP on when fault is set.			

International (Continued)

PID/SID	FMI	Fault Code	Fault Description
21	12	145*	CMP Signal Inactive While ICP has increased
22	2	552	IDM incorrect CMPO signal signature
	8	554	IDM Incorrect CKPO signal signature
	11	553	IDM CKPO signal inactive
	12	551	IDM/CMPO signal inactive
27	0	367*	Incorrect position signal when EGR Valve is expected closed
	2	345	Faults detected during VGT portion of the AMS Test
		346	Faults detected during EGR portion of the AMS Test
	3	164*	Exhaust Gas Recirculation Valve Position Signal out of range high
	4	163*	Exhaust Gas Recirculation Valve Position Signal out of range low
	5	353	Variable Geometry Turbo control over duty cycle
	6	354	Variable Geometry Turbo control under duty cycle
	8	366*	EGR valve operating outside of the expected range
	10	361	VGT control input (MAP/EBP) above/below desired level
		365*	EFR Valve Position above/below desired level
	11	264	Exhaust Gas Recirculation OCC self test failed
29	3	214	Remote Throttle Signal Out of Range HIGH
	4	213	Remote Throttle Signal Out of Range LOW
34	0	343	Excessive Exhaust Back Pressure (gauge)
	7	351	Change in exhaust back pressure did not occur when expected
	10	352	Exhaust Back Pressure unable to achieve commanded setpoint

* - Indicates WARN ENGINE LAMP on when fault is set.

International (Continued)

PID/SID	FMI	Fault Code	Fault Description
34	19	342	Exhaust Back Pressure Signal Out of Range High
	20	341	Exhaust Back Pressure Signal Out of Range Low
	29	344	Exhaust Back Pressure Above spec. when engine off or being cranked
35	11	245	Exhaust Pressure Regulator OCC Self Test Failed
36	11	252	Glow Plug Lamp OCC Self Test Fault
38	11	251	Glow Plug Control OCC Self Test Fault
39	11	267	Engine Crank Inhibit OCC self test failed
42	11	241	Injection Control Pressure Regulator OCC Self Test Failed
54	11	262	Change Oil Lamp OCC Fault
55	11	256	Radiator Shutter Enable OCC Fault
56	11	246	Engine Fan-OCC Self Test Fault
62	11	265	Vehicle Retarder Relay OCC Fault
64	12	146	CKP signal inactive
	2	147	Incorrect CKP signal signature
71	14	324	Idle Shutdown Timer Enabled Engine Shutdown
73	3	226	Hydraulic Pressure Sensor Signal Out of Range HIGH
	4	216	Hydraulic Pressure Signal Out of Range LOW
	10	336	Hydraulic Pressure unable to achieve commanded set point
84	3	142	Vehicle Speed Signal Out of Range HIGH
	4	141	Vehicle Speed Signal Out of Range LOW
	8	215	Vehicle Speed Signal Frequency Out of Range HIGH
91	2	133*	Accelerator Pedal Position Signal In Range Fault *M*
	3	132*	Accelerator Pedal Position Signal Out of Range HIGH

* - Indicates WARN ENGINE LAMP on when fault is set.

International (Continued)

PID/SID	FMI	Fault Code	Fault Description
91	4	131*	Accelerator Pedal Position Signal Out of Range LOW
	7	134*	Accelerator Pedal Position and Idle Validation Switch Disagree
100	0	225	Engine Oil Pressure Sensor Signal In-Range Fault
	1	313	Engine Oil Pressure Below Warning Level
	3	212*	Engine Oil Pressure Signal Out of Range HIGH
	4	211*	Engine Oil Pressure Signal Out of Range LOW
	7	314	Engine Oil Pressure Below Critical Level
102	2	123*	Intake Manifold Absolute Pressure In Range Fault
	3	121*	Intake Manifold Absolute Pressure Signal Out of Range HIGH
	4	122*	Intake Manifold Absolute Pressure Signal Out of Range LOW
103	0	355	Variable Geometry Turbo overspeed
105	3	162	Manifold Air Temperature Signal out of range high
	4	161	Manifold Air Temperature Signal out of range low
108	3	151	Barometric Pressure Signal Out of Range HIGH
	4	152	Barometric Pressure Signal Out of Range LOW
110	0	321	Engine Coolant Temperature Above Warning Level
	1	316	Engine Coolant Temperature unable to reach commanded set point
	3	115*	Engine Coolant Temperature Signal Out of Range HIGH
	4	114*	Engine Coolant Temperature Signal Out of Range LOW
	7	322	Engine Coolant Temperature Above Critical Level
* - Indicates WARN ENGINE LAMP on when fault is set.			

International (Continued)

PID/SID	FMI	Fault Code	Fault Description
110	14	325	Power Reduced, Matched to Cooling System Performance
111	1	323	Engine Coolant Level Below Warning/Critical Level
	2	236	ECL Switch Circuit Fault
151	5	513*	Low Side to Bank 1 Open
	6	515*	Bank 1 Low Side Short to Ground or B+
152	5	514*	Low Side to Bank 2 Open
	5	514*	Low Side to Bank 2 Open
	6	521*	Bank 2 Low Side Short to Ground or B+
155	7	543*	EMCM/IDM communications fault
164	0	331*	Injection Control Pressure Above System Working Range
	1	335	ICP Unable to build pressure during cranking
	3	125*	Injection Control Pressure Signal Out of Range HIGH
	4	124*	Injection Control Pressure Signal Out of Range LOW
	7	334	ICP Unable to achieve setpoint in time (poor performance)
	10	333*	Injection Control Pressure Above/Below Desired Level
	13	332*	Injection Control Pressure Above Spec. With Engine Off
168	3	112	Electrical System B+ Voltage Out of Range HIGH
	4	113	Electrical System B+ Voltage Out of Range LOW
171	3	155	Air Inlet Temperature Signal Out of Range HIGH
	4	154	Air Inlet Temperature Signal Out of Range LOW
175	3	312*	Engine Oil Temperature Signal Out of Range High
	4	311*	Engine Oil Temperature Signal Out of Range Low
* - Indicates WARN ENGINE LAMP on when fault is set.			

International (Continued)

PID/SID	FMI	Fault Code	Fault Description
190	0	315*	Engine Speed Above Warning Level
221	3	533	IDM relay voltage high
	4	534	IDM relay voltage low
230	11	135*	Idle Validation Switch Circuit Fault
233	4	523	IDM VIGN voltage low
238	11	263	Oil Water Lamp OCC Fault
239	11	266	Engine Warning Lamp OCC Fault
240	2	631*	ROM (Read Only Memory) Self Test Fault
	11	661	RAM Programmable Parameter list corrupt
	13	655	Programmable Parameter list level incompatible
	14	624	Field default active
244	2	221	Cruise-PTO Control Switch Circuit Fault
247	2	222	Brake Switch Circuit Fault
248	11	244	Engine to Transmission Data Line OCC Self Test Failed
250	2	231	ATA Data Communication Link Error
252	1	613*	ECM/IDM software not compatible
	13	614*	EFRC/EECM ING configuration mismatch
	14	665	Programmable Parameter memory content corrupt
253	0	622*	Engine using Field Default Rating
	1	621*	Engine using Mfg. Default Rating Program Engine
	13	623*	Invalid Engine Rating Code; Check ECM programming
	14	664	Calibration level incompatible
254	6	525*	Injector Driver Circuit Fault
	8	626	Unexpected reset fault
	12	632	RAM Memory-CPU Self Test Fault
* - Indicates WARN ENGINE LAMP on when fault is set.			

MID 128 - Mack

Mack

PID/ SID	FMI	Fault Code	Fault Description
1	4, 3, 2, 8	8-1	Electronic Unit Pump (EUP) #1
2	4, 3, 2, 8	8-2	Electronic Unit Pump (EUP) #2
3	4, 3, 2, 8	8-3	Electronic Unit Pump (EUP) #3
4	4, 3, 2, 8	8-4	Electronic Unit Pump (EUP) #4
5	4, 3, 2, 8	8-5	Electronic Unit Pump (EUP) #5
6	4, 3, 2, 8	8-6	Electronic Unit Pump (EUP) #6
21	2, 8	3-4	Engine Position Sensor
22	2, 8	3-2	Engine Speed Sensor
33	5, 4, 3, 2, 8	4-2	Fan Clutch Output
98	4, 3	5-7	Engine Oil Level
100	4, 3	1-1	Oil Pressure Sensor
102	4, 3	2-2	Boost Pressure Sensor
105	4, 3	2-3	Intake Air Temperature Sensor
110	4, 3, 5, 10	2-1	Engine Coolant Temperature Sensor
111	3	1-7	Coolant Level
151	4, 3	8-9	Solenoid Boost Voltage
158	4	7-6	Switched Voltage
171	4, 3, 5	1-4	Ambient Air Temperature Sensor
174	4, 3, 5	1-3	Fuel Temperature Sensor
175	4, 3, 5	2-7	Engine Oil Temperature Sensor
190	2	N/A	Engine Speed Sensor
		3-3	Redundant Engine Speed
231	8	6-4	J1939 Link
233	12	6-6	Fuel Control Module
250	8	6-3	J1708/J1587 Link
254	8	6-5	All Communications Lost - Engine Shutdown

MID 130 - Eaton AC-AS1

Eaton AC-AS1

PID/SID	FMI	Fault Code	Fault Description
18	2, 4, 5 & 12	14	Shift Lever
	14	83	Shift Lever Missing
		91	CAN_HI or LO shorted
		92	Framing Error
34	2	53	Reverse Ball Switch
36	3, 4 & 5	43	Range Solenoid Coil
37	4 & 5	46	Splitter LO Solenoid Coil
39	5 & 6	61	Rail Select Motor
40	5 & 6	63	Gear Select Motor
53	3, 4 & 5	44	Inertia Brake Solenoid Coil
54	7	74	Failed to Engage Starting Gear
56	7	41	Range Failed to Engage
58	7	73	Failed to Engage Gear
59	2	52	Gear Select Sensor
	7	72	Failed to Select a Rail
60	2	51	Rail Select Sensor
	7	71	Stuck Engaged
61	7	42	Splitter Failed to Engage
62	3, 4, & 5	31	Engine Brake Relay Coil
160	2	57	Mainshaft Speed Sensor
161	2	56	Input Speed Sensor
168	4	33	Battery/SystemVoltage
191	2	58	Output Shaft Speed Sensor
231	14	35	J1939 Data Link
		93	Loss of J1939 Communication from the Engine
		94	No Incoming traffic
		95	Bus off for at least 5 seconds
		96	Bus off for 200 mSeconds
233	12	12	Transmission ECU (Controller #2)
236	4 & 5	13	Power Connect Relay Coil

Eaton AC-AS1 (Continued)

PID/SID	FMI	Fault Code	Fault Description
237	3, 4	17	Start Enable Relay Coil
248	2	16	Eaton Proprietary Data Link (EPL)
251	4	65	Low Motor Voltage
254	12	11	ECU (Controller #1)

MID 130 - Eaton AS2-ASX

Eaton AS2-ASX

PID/SID	FMI	Fault Code	Fault Description
18	2, 4, 5 & 12	14	Shift Lever
	14	83	Shift Lever Missing
34	2	53	Reverse Ball Switch
36	3, 4 & 5	43	Range Solenoid Coil
37	4 & 5	46	Splitter LO Solenoid Coil
39	5 & 6	61	Rail Select Motor
40	5 & 6	63	Gear Select Motor
53	3, 4 & 5	44	Inertia Brake Solenoid Coil
54	7	74	Failed to Synchronize
56	7	41	Range Failed to Engage
58	7	73	Failed to Engage Gear
59	2	52	Gear Select Sensor
	7	72	Failed to Select a Rail
60	2	51	Rail Select Sensor
	7	71	Stuck Engaged
61	7	42	Splitter Failed to Engage
62	4	32	Switched System Voltage
160	2	57	Mainshaft Speed Sensor
161	2	56	Input Speed Sensor
168	4	33	Battery/System Voltage
	14	92	Weak System battery Voltage
191	2	58	Output Shaft Speed Sensor
231	2	35	J1939 Data Link
	14	93	Loss of J1939 Communication from the Engine
233	12	12	Transmission ECU (Controller #2)
237	3, 4	17	Start Enable Relay Coil
248	2	16	Eaton Proprietary Data Link (EPL)
251	4	65	Low Logic Voltage
254	12	11	ECU (Controller #1)

Eaton AS2-ASX (Continued)

PID/SID	FMI	Fault Code	Fault Description
-	-	25	System OK

MID 130 - Eaton ASW

Eaton ASW

PID/SID	FMI	Fault Code	Fault Description
18	2, 4, 5 & 12	14	Shift Lever
	14	83	Shift Lever Missing
34	2	53	Reverse Ball Switch
36	3, 4 & 5	43	Range Solenoid Coil
37	4 & 5	46	Splitter LO Solenoid Coil
39	5 & 6	61	Rail Select Motor
40	5 & 6	63	Gear Select Motor
52	3, 4, 5 & 7	28	Clutch System Fault
53	3, 4 & 5	44	Inertia Brake Solenoid Coil
54	7	74	Failed to Synchronize
56	7	41	Range Failed to Engage
58	7	73	Failed to Engage Gear
59	2	52	Gear Select Sensor
	7	72	Failed to Select a Rail
60	2	51	Rail Select Sensor
	7	71	Stuck Engaged
61	7	42	Splitter Failed to Engage
62	4	32	Switched System Voltage
160	2	57	Mainshaft Speed Sensor
161	2	56	Input Speed Sensor
168	4	33	Battery/System Voltage
	14	92	Weak System battery Voltage
191	2	58	Output Shaft Speed Sensor
231	2	35	J1939 Data Link
	14	93	Loss of J1939 Communication from the Engine
233	12	12	Transmission ECU (Controller #2)
237	3, 4	17	Start Enable Relay Coil
248	2	16	Eaton Proprietary Data Link (EPL)
251	4	65	Low Logic Voltage

Eaton ASW (Continued)

PID/SID	FMI	Fault Code	Fault Description
254	12	11	ECU (Controller #1)
-	-	25	System OK

MID 130 - Eaton CEEMAT

Eaton CEEMAT

PID/SID	FMI	Fault Code	Fault Description
18	2, 4, 5 & 12	14	Shift Lever
	12	82	Multiple Non-Adjacent Sensor
	14	81	Invalid Shift Lever at Start
		83	Shift Lever Missing
36	3, 4 & 5	43	Range Solenoid Coil
39	3, 4 & 5	61	Autoshifter Solenoid 1 Coil
40	3, 4 & 5	63	Autoshifter Solenoid 3 Coil
43	3, 4 & 5	21	Interrupt Solenoid Coil
44	3, 4 & 5	22	Lockup Solenoid Coil
45	4 & 5	54	HI Range Sensor
46	4 & 5	55	LO Range Sensor
47	4 & 5	52	Neutral Sensor
48	4 & 5	53	Gear Engaged Sensor
49	4 & 5	51	Center Rail Sensor
50	3, 4 & 5	62	Autoshifter Solenoid 2 Coil
51	2 & 7	34	Throttle Position Sensor
	3, 4 & 5	64	Autoshifter Solenoid 4 Coil
53	3, 4 & 5	32	De-Fuel Solenoid Coil
		44	Disc/Inertia Brake Solenoid Coil
54	3, 4 & 5	45	Band/Engine Boost Solenoid Coil
	7	74	Failed to Synchronize
56	7	41	Range Failed to Engage
57	2	15	Shift Lever Data Link
58	7	73	Failed to Engage Gear
59	7	72	Failed to Select a Rail
60	7	71	Stuck Engaged
62	3, 4, & 5	31	Engine Brake Relay Coil
127	7	24	Hydraulic System Fault
160	2	57	Output shaft Speed Sensor
161	2	56	Input Speed Sensor
168	4	33	Battery/SystemVoltage

Eaton CEEMAT (Continued)

PID/SID	FMI	Fault Code	Fault Description
190	2	23	Engine Speed Sensor
249	2	35	J1922 Data Link
254	12	11	ECU (Controller #1)

MID 130 - Eaton CEMT

Eaton CEMT

PID/ SID	FMI	Fault Code	Fault Description
44	3, 4 & 5	22	Bypass/Lockup Solenoid Coil
53	3, 4 & 5	15	Inertia Brake Solenoid Coil
160	2	57	Output Shaft Speed Sensor
161	2	56	Input Shaft Speed Sensor
168	4	33	System Voltage
190	2	23	Engine Speed Sensor
254	12	13	Power Relay Coil

MID 130 - Eaton DM2

Eaton DM2

PID/SID	FMI	Fault Code	Fault Description
18	2, 4, 5 & 12	14	Shift Lever
	14	83	Shift Lever Missing
34	2	53	Reverse Ball Switch
36	3, 4 & 5	43	Range Solenoid Coil
37	4 & 5	46	Splitter LO Solenoid Coil
39	5 & 6	61	Rail Select Motor
40	5 & 6	63	Gear Select Motor
53	3, 4 & 5	44	Inertia Brake Solenoid Coil
54	7	74	Failed to Synchronize
55	7	27	Clutch Disengagement
	10	26	Clutch Slip
56	7	41	Range Failed to Engage
58	7	73	Failed to Engage Gear
59	2	52	Gear Select Sensor
	7	72	Failed to Select a Rail
60	2	51	Rail Select Sensor
	7	71	Stuck Engaged
61	7	42	Splitter Failed to Engage
62	4	32	Switched System Voltage
160	2	57	Mainshaft Speed Sensor
161	2	56	Input Speed Sensor
168	4	33	Battery/System Voltage
	14	92	Weak System battery Voltage
191	2	58	Output Shaft Speed Sensor
218	3, 4 & 5	31	Ignition Interrupt Relay Coil
231	2	35	J1939 Data Link
	14	93	Loss of J1939 Communication from the Engine
233	12	12	Transmission ECU (Controller #2)
237	3, 4	17	Start Enable Relay Coil

Eaton DM2 (Continued)

PID/SID	FMI	Fault Code	Fault Description
248	2	16	Eaton Proprietary Data Link (EPL)
251	4	65	Low Logic Voltage
254	12	11	ECU (Controller #1)
-	-	25	System OK

MID 130 - Eaton Lightning

Eaton Lightning

PID/SID	FMI	Fault Code	Fault Description
14	7	74	Engine/Transmission Missed Synchronization
35	2, 4 & 5	48	High Ranger Shift Solenoid
36	2, 4 & 5	43	Low Range Shift Solenoid
37	2, 4 & 5	46	Splitter Shift Solenoid
38	7	71	Splitter or Ranger Stuck in Gear
39	7	71	Splitter or Ranger Stuck in Gear
48	2	36	Shift Lever Position
49	2	36	Shift Lever Position
56	7	71	Splitter or Ranger Stuck in Gear
58	7	73	Transmission Missed Synchronization
58	11	66	Unconfirmed Torque Path
158	3, 4	33	Battery/System Voltage
168	3, 4	33	Battery/System Voltage
191	8	58	Output Speed Sensor
231	12	35	J1939 Data Link
254	12	11	ECU (Controller #1)
-	-	25	No Fault Code

MID 130 - Meritor FreedomLin

Meritor FreedomLin

PID/SID	FMI	Fault Code	Fault Description
20	-	14	Output ADVP Fault (wakeup control signal for ZMTEC and voltage supply doubler and voltage supply to output shaft speed sensor #1)
21	-	15	ECU Temperature Too High or ECU Temperature Sensor Fault
31	-	1F	Range Position Sensor Fault
32	-	20	Splitter Position Sensor Self Fault
33	-	21	Clutch Actuator Fault
34	-	22	Clutch Actuator Solenoid Fault
35	-	23	High Range Solenoid (Y9) Fault
36	-	24	Low Range Solenoid (Y8) Fault
37	-	25	Splitter Direct Solenoid (Y2) Fault
38	-	26	Splitter Indirect Solenoid (Y3) Fault
39	-	27	Rail Select #1 Solenoid (Y4) Fault
40	-	28	Gear Engage #1 Solenoid (Y6) Fault
43	-	2B	Error on "Ignition Lock" Signal (terminal 15)
48	-	30	Gear Engage Position Sensor Fault
50	-	32	Rail Select #2 Solenoid (Y5) Fault
51	-	33	Gear Engage #2 Solenoid (Y7) Fault
54	-	36	Inertia Brake Solenoid (Y1) Fault
55	-	37	Clutch Engage/Disengage Fault
56	-	38	Range Shift Engagement/Disengage Fault
57	-	39	Shift Lever Fault or Private CAN Fault
58	-	3A	Main Transmission Engagement/Disengage Fault
59	-	3B	Rail Select Cylinder Engagement/Disengage Fault
60	-	3C	Rail Select Position Sensor Fault
61	-	3D	Splitter Cylinder Engagement Disengage Fault
63	-	3F	Error on Output Speed Signal 2

Meritor FreedomLin (Continued)

PID/SID	FMI	Fault Code	Fault Description
106	-	6A	Pressure Reduction Valve Fault or Pressure Sensor Signal Fault
150	-	96	PTO Fault
151	-	97	Plausibility Error Between Transmission Input Speed and Output Speed
152	-	98	Main Solenoid (Y1) Fault
153	-	99	Error ISO 14230 Communication Line
154	-	9A	Error on Both Output Shaft Speed Sensors
161	-	A1	Input Shaft Speed Sensor Fault
177	-	B1	Oil Temperature Sensor Fault
191	-	BF	Output Shaft Speed Sensor #1 (the lower one) Fault
230	-	E6	Permanent Idle Signal
231	-	E7	SAE J-1939 Bus Fault
248	-	F8	Output SD to Display Fault. The Display will Read "EE"
251	-	FB	Voltage Supply Fault
253	-	FD	EOL EEPROM Fault
254	-	FE	Cut-off Relay in ECU Does Not Switch Off

MID 130 - Meritor SureShift

Meritor SureShift

PID/ SID	FMI	Fault Code	Fault Description
31	-	1F	Transmission Range Position Sensor
35	-	23	High Ranger Solenoid
36	-	24	Low Ranger Solenoid
39	-	27	X-Y Rail Select Solenoid #1
40	-	28	X-Y Engage Fork Solenoid #1
48	-	30	X-Y Engage Fork Position Sensor
50	-	32	X-Y Rail Select Solenoid #2
51	-	33	X-Y Engage Fork Solenoid #2
56	-	38	Auxiliary Section Mechanical System
57	-	39	Shift Lever Assembly Communication
58	-	3A	Main Box Shift Engagement System
59	-	3B	Main Box Shift Selection System
60	-	3C	X-Y Rail Select Position Sensor
151	-	97	Speed Sensor Plausibility
152	-	98	Shift Lever Box Supply Output
153	-	99	Limp Home Disable Output
154	-	9A	Limp Home System/function
161	-	A1	Main Countershaft Speed Sensor
191	-	BF	Transmission Output Shaft Speed Sensor
194	-	C2	No Codes
227	-	E3	Oil Temperature Out of Limits or Sensor
231	-	E7	SAE J-1939 Data Link
238	-	EE	Diagnostic Lamp
251	-	FB	Power Supply
252	-	FC	Transmission Calibration Routine
253	-	FD	Transmission Calibration Memory
254	-	FE	Transmission Controller

MID 136 - Bendix Tractor ABS

Bendix Tractor ABS

PID/SID	FMI	Fault Code	Fault Description	
1	0	2-1	Left Steer Air Gap too Large	
	2	2-8	Left Steer Sensor Configuration Error	
	8	2-2	Left Steer Air Gap too Lager or Sensor Shorted	
		2-4	Left Steer Wheel Lock Excessive During ABS Cycle	
		2-5	Left Steer Excessive Rate of Wheel Decel or Sensor Shorted	
	10	2-3	Left Steer Sensor Signal is Noisy	
	12	2-6	Left Steer Sensor Shorted or Open	
		2-7	Left Steer Internal Sensor Port Error	
	2	0	3-1	Right Steer Air Gap too Large
		2	3-8	Right Steer Sensor Configuration Error
8		3-2	Right Steer Air Gap too Lager or Sensor Shorted	
		3-4	Right Steer Wheel Lock Excessive During ABS Cycle	
		3-5	Right Steer Excessive Rate of Wheel Decel or Sensor Shorted	
10		3-3	Right Steer Sensor Signal is Noisy	
12		3-6	Right Steer Sensor Shorted or Open	
		3-7	Right Steer Internal Sensor Port Error	
3	0	4-1	Left Rear Air Gap too Large	
	2	4-8	Left Rear Sensor Configuration Error	
	8	4-2	Left Rear Air Gap too Lager or Sensor Shorted	
		4-4	Left Rear Wheel Lock Excessive During ABS Cycle	
		4-5	Left Rear Excessive Rate of Wheel Decel or Sensor Shorted	
	10	4-3	Left Rear Sensor Signal is Noisy	
	12	4-6	Left Rear Sensor Shorted or Open	
		4-7	Left Rear Internal Sensor Port Error	
4	0	5-1	Right Rear Air Gap too Large	

Bendix Tractor ABS (Continued)

PID/SID	FMI	Fault Code	Fault Description
4	2	5-8	Right Rear Sensor Configuration Error
	8	5-2	Right Rear Air Gap too Lager or Sensor Shorted
		5-4	Right Rear Wheel Lock Excessive During ABS Cycle
		5-5	Right Rear Excessive Rate of Wheel Decel or Sensor Shorted
	10	5-3	Right Rear Sensor Signal is Noisy
	12	5-6	Right Rear Sensor Shorted or Open
		5-7	Right Rear Internal Sensor Port Error
	5	0	6-1
2		6-8	Left Rear Rear Sensor Configuration Error
8		6-2	Left Rear Rear Air Gap too Lager or Sensor Shorted
		6-4	Left Rear Rear Wheel Lock Excessive During ABS Cycle
		6-5	Left Rear Rear Excessive Rate of Wheel Decel or Sensor Shorted
10		6-3	Left Rear Rear Sensor Signal is Noisy
12		6-6	Left Rear Rear Sensor Shorted or Open
		6-7	Left Rear Rear Internal Sensor Port Error
6	0	7-1	Right Rear Rear Air Gap too Large
	2	7-8	Right Rear Rear Sensor Configuration Error
	8	7-2	Right Rear Rear Air Gap too Lager or Sensor Shorted
		7-4	Right Rear Rear Wheel Lock Excessive During ABS Cycle
		7-5	Right Rear Rear Excessive Rate of Wheel Decel or Sensor Shorted
	10	7-3	Right Rear Rear Sensor Signal is Noisy
	12	7-6	Right Rear Rear Sensor Shorted or Open
		7-7	Right Rear Rear Internal Sensor Port Error

Bendix Tractor ABS (Continued)

PID/SID	FMI	Fault Code	Fault Description
7	0	8-1	Left Steer Short to Voltage on Release Solenoid Wire
	2	8-8	Left Steer Valve Configuration Error
	8	8-2	Left Steer Short to Ground on Release Solenoid Wire
		8-4	Left Steer Open Circuit on Common Wire
		8-5	Left Steer Short to Voltage or Open Circuit on Hold Solenoid Wire
	10	8-3	Left Steer Open Circuit on Release Solenoid Wire
	12	8-6	Left Steer Short to Ground on Hold Solenoid Wire
8-7		Left Steer Open Circuit on Hold Wire	
8	2	9-8	Right Steer Valve Configuration Error
	3	9-1	Right Steer Short to Voltage on Release Solenoid Wire
		9-5	Right Steer Short to Voltage or Open Circuit on Hold Solenoid Wire
	4	9-2	Right Steer Short to Ground on Release Solenoid Wire
		9-6	Right Steer Short to Ground on Hold Solenoid Wire
	5	9-3	Right Steer Open Circuit on Release Solenoid Wire
		9-4	Right Steer Open Circuit on Common Wire
9-7		Right Steer Open Circuit on Hold Wire	
9	2	10-8	Left Rear Valve Configuration Error
	3	10-1	Left Rear Short to Voltage on Release Solenoid Wire
		10-5	Left Rear Short to Voltage or Open Circuit on Hold Solenoid Wire
	4	10-2	Left Rear Short to Ground on Release Solenoid Wire
		10-6	Left Rear Short to Ground on Hold Solenoid Wire
5	10-3	Left Rear Open Circuit on Release Solenoid Wire	

Bendix Tractor ABS (Continued)

PID/SID	FMI	Fault Code	Fault Description
9	5	10-4	Left Rear Open Circuit on Common Wire
		10-7	Left Rear Open Circuit on Hold Wire
10	2	11-8	Right Rear Valve Configuration Error
	3	11-1	Right Rear Short to Voltage on Release Solenoid Wire
		11-5	Right Rear Short to Voltage or Open Circuit on Hold Solenoid Wire
	4	11-2	Right Rear Short to Ground on Release Solenoid Wire
		11-6	Right Rear Short to Ground on Hold Solenoid Wire
	5	11-3	Right Rear Open Circuit on Release Solenoid Wire
		11-4	Right Rear Open Circuit on Common Wire
11-7		Right Rear Open Circuit on Hold Wire	
11	2	12-8	Left Rear Rear Valve Config. Error
	3	12-1	Left Rear Rear Short to Voltage on Release Solenoid Wire
		12-5	Left Rear Rear Short to Voltage or Open Circuit on Hold Solenoid Wire
	4	12-2	Left Rear Rear Short to Ground on Release Solenoid Wire
		12-6	Left Rear Rear Short to Ground on Hold Solenoid Wire
	5	12-3	Left Rear Rear Open Circuit on Release Solenoid Wire
		12-4	Left Rear Rear Open Circuit on Common Wire
12-7		Left Rear Rear Open Circuit on Hold Wire	
12	2	13-8	Right Rear Rear Valve Config. Error
	3	13-1	Right Rear Rear Short to Voltage on Release Solenoid Wire
		13-5	Right Rear Rear Short to Voltage or Open Circuit on Hold Solenoid Wire
	4	13-2	Right Rear Rear Short to Ground on Release Solenoid Wire

Bendix Tractor ABS (Continued)

PID/SID	FMI	Fault Code	Fault Description
12	4	13-6	Right Rear Rear Short to Ground on Hold Solenoid Wire
	5	13-3	Right Rear Rear Open Circuit on Release Solenoid Wire
		13-4	Right Rear Rear Open Circuit on Common Wire
		13-7	Right Rear Rear Open Circuit on Hold Wire
13	3	17-1	Retarder Relay Short to Voltage or Open Circuit
	4	17-2	Retarder Relay Short to Ground
14	3	10-9	Common Side of Valves - Stray Voltage Detected
		10-10	Common Side of Valves Shorted High
		11-9	Common Side of Valves - Stray Voltage Detected
		11-10	Common Side of Valves Shorted High
	4	10-11	Common Side of Valves - Shorted to Ground
		11-11	Common Side of Valves - Shorted to Ground
18	2	14-8	ATC Valve Configuration error
	3	14-5	ATC Valve Solenoid Shorted to Voltage
	4	14-6	ATC Valve Solenoid Shorted to Ground
	5	14-7	ATC Valve Solenoid Open Circuit
23	14	17-10	ABS Warning Light Shorted or Open (2X only)
151	14	8	Inter-axle Differential Control Circuit
		17-12	Sensor Fault bit set. Drive Vehicle to Clear
231	2	14-12	ATC Engine Data Link Error, J1939
		17-3	ATC Engine Data Link Error, J1939
		17-4	ATC Engine Data Link Error, J1939
	12	15-9	ECU Internal Fault
249	2	14-12	ATC Engine Data Link Error, J1922
		17-3	ATC Engine Data Link Error, J1922
		17-4	ATC Engine Data Link Error, J1922

Bendix Tractor ABS (Continued)

PID/SID	FMI	Fault Code	Fault Description	
251	2	16-11	High Differential Voltage Between Diagonals	
		3	16-2	Low Voltage on Diagonal 1
			16-6	Low Voltage on Diagonal 2
	4	16-10	Low Voltage on Switched Ignition Input	
		16-1	Excessive Voltage on Diagonal 1	
		16-5	Excessive Voltage on Diagonal 2	
	5	16-9	High Voltage on Switched Ignition Input	
		16-3	No Voltage Found on Diagonal 1	
		16-4	No Ground Found on Diagonal 1	
		16-7	No Voltage Found on Diagonal 2	
	253	12	16-8	No Ground Found on Diagonal 2
			15-2	ECU Internal Fault
		13	15-4	ECU Internal Fault
15-3			ECU Internal Fault	
15-8			ECU Internal Fault	
17-5	17-5	Tire Size Front to Rear Out of Ranger		
	17-6	Tire Size Out of Ranger or Parameter Fault		
254	0	15-2	ECU Internal Fault	
		15-5	ECU Internal Fault	
	2	15-6	ECU Internal Fault	
		15-7	ECU Internal Fault	
	12	15-1	ECU Internal Fault	
		15-10	ECU Internal Fault	
15-11		ECU Internal Fault		
-	-	1-1	System OK	
		17-7	Brake Switch not Pushed at the Power Cycle	
		17-8	ATC System Disable for Dynamometer Test	

MID 136 - Eaton Tractor ABS

Eaton Tractor ABS

PID/SID	FMI	Fault Code	Fault Description	
1	0	2-1	Left Steer Air Gap too Large	
	2	2-8	Left Steer Sensor Configuration Error	
	8	2-2	Left Steer Air Gap too Lager or Sensor Shorted	
		2-4	Left Steer Wheel Lock Excessive During ABS Cycle	
		2-5	Left Steer Excessive Rate of Wheel Decel or Sensor Shorted	
	10	2-3	Left Steer Sensor Signal is Noisy	
	12	2-6	Left Steer Sensor Shorted or Open	
		2-7	Left Steer Internal Sensor Port Error	
	2	0	3-1	Right Steer Air Gap too Large
		2	3-8	Right Steer Sensor Configuration Error
8		3-2	Right Steer Air Gap too Lager or Sensor Shorted	
		3-4	Right Steer Wheel Lock Excessive During ABS Cycle	
		3-5	Right Steer Excessive Rate of Wheel Decel or Sensor Shorted	
10		3-3	Right Steer Sensor Signal is Noisy	
12		3-6	Right Steer Sensor Shorted or Open	
		3-7	Right Steer Internal Sensor Port Error	
3	0	4-1	Left Rear Air Gap too Large	
	2	4-8	Left Rear Sensor Configuration Error	
	8	4-2	Left Rear Air Gap too Lager or Sensor Shorted	
		4-4	Left Rear Wheel Lock Excessive During ABS Cycle	
		4-5	Left Rear Excessive Rate of Wheel Decel or Sensor Shorted	
	10	4-3	Left Rear Sensor Signal is Noisy	
	12	4-6	Left Rear Sensor Shorted or Open	
		4-7	Left Rear Internal Sensor Port Error	
4	0	5-1	Right Rear Air Gap too Large	

Eaton Tractor ABS (Continued)

PID/SID	FMI	Fault Code	Fault Description
4	2	5-8	Right Rear Sensor Configuration Error
	8	5-2	Right Rear Air Gap too Lager or Sensor Shorted
		5-4	Right Rear Wheel Lock Excessive During ABS Cycle
		5-5	Right Rear Excessive Rate of Wheel Decel or Sensor Shorted
	10	5-3	Right Rear Sensor Signal is Noisy
	12	5-6	Right Rear Sensor Shorted or Open
		5-7	Right Rear Internal Sensor Port Error
5	0	6-1	Left Rear Rear Air Gap too Large
	2	6-8	Left Rear Rear Sensor Configuration Error
	8	6-2	Left Rear Rear Air Gap too Lager or Sensor Shorted
		6-4	Left Rear Rear Wheel Lock Excessive During ABS Cycle
		6-5	Left Rear Rear Excessive Rate of Wheel Decel or Sensor Shorted
	10	6-3	Left Rear Rear Sensor Signal is Noisy
	12	6-6	Left Rear Rear Sensor Shorted or Open
6-7		Left Rear Rear Internal Sensor Port Error	
6	0	7-1	Right Rear Rear Air Gap too Large
	2	7-8	Right Rear Rear Sensor Configuration Error
	8	7-2	Right Rear Rear Air Gap too Lager or Sensor Shorted
		7-4	Right Rear Rear Wheel Lock Excessive During ABS Cycle
		7-5	Right Rear Rear Excessive Rate of Wheel Decel or Sensor Shorted
	10	7-3	Right Rear Rear Sensor Signal is Noisy
	12	7-6	Right Rear Rear Sensor Shorted or Open
7-7		Right Rear Rear Internal Sensor Port Error	

Eaton Tractor ABS (Continued)

PID/SID	FMI	Fault Code	Fault Description
7	0	8-1	Left Steer Short to Voltage on Release Solenoid Wire
	2	8-8	Left Steer Valve Configuration Error
	8	8-2	Left Steer Short to Ground on Release Solenoid Wire
		8-4	Left Steer Open Circuit on Common Wire
		8-5	Left Steer Short to Voltage or Open Circuit on Hold Solenoid Wire
	10	8-3	Left Steer Open Circuit on Release Solenoid Wire
	12	8-6	Left Steer Short to Ground on Hold Solenoid Wire
8-7		Left Steer Open Circuit on Hold Wire	
8	2	9-8	Right Steer Valve Configuration Error
	3	9-1	Right Steer Short to Voltage on Release Solenoid Wire
		9-5	Right Steer Short to Voltage or Open Circuit on Hold Solenoid Wire
	4	9-2	Right Steer Short to Ground on Release Solenoid Wire
		9-6	Right Steer Short to Ground on Hold Solenoid Wire
	5	9-3	Right Steer Open Circuit on Release Solenoid Wire
		9-4	Right Steer Open Circuit on Common Wire
		9-7	Right Steer Open Circuit on Hold Wire
9	2	10-8	Left Rear Valve Configuration Error
	3	10-1	Left Rear Short to Voltage on Release Solenoid Wire
	3	10-5	Left Rear Short to Voltage or Open Circuit on Hold Solenoid Wire
	4	10-2	Left Rear Short to Ground on Release Solenoid Wire
		10-6	Left Rear Short to Ground on Hold Solenoid Wire
	5	10-3	Left Rear Open Circuit on Release Solenoid Wire

Eaton Tractor ABS (Continued)

PID/SID	FMI	Fault Code	Fault Description
9	5	10-4	Left Rear Open Circuit on Common Wire
		10-7	Left Rear Open Circuit on Hold Wire
10	2	11-8	Right Rear Valve Configuration Error
	3	11-1	Right Rear Short to Voltage on Release Solenoid Wire
		11-5	Right Rear Short to Voltage or Open Circuit on Hold Solenoid Wire
	4	11-2	Right Rear Short to Ground on Release Solenoid Wire
		11-6	Right Rear Short to Ground on Hold Solenoid Wire
	5	11-3	Right Rear Open Circuit on Release Solenoid Wire
		11-4	Right Rear Open Circuit on Common Wire
		11-7	Right Rear Open Circuit on Hold Wire
11	2	12-8	Left Rear Rear Valve Config. Error
	3	12-1	Left Rear Rear Short to Voltage on Release Solenoid Wire
		12-5	Left Rear Rear Short to Voltage or Open Circuit on Hold Solenoid Wire
	4	12-2	Left Rear Rear Short to Ground on Release Solenoid Wire
		12-6	Left Rear Rear Short to Ground on Hold Solenoid Wire
	5	12-3	Left Rear Rear Open Circuit on Release Solenoid Wire
		12-4	Left Rear Rear Open Circuit on Common Wire
12-7		Left Rear Rear Open Circuit on Hold Wire	
12	2	13-8	Right Rear Rear Valve Configuration Error
	3	13-1	Right Rear Rear Short to Voltage on Release Solenoid Wire
		13-5	Right Rear Rear Short to Voltage or Open Circuit on Hold Solenoid Wire

Eaton Tractor ABS (Continued)

PID/SID	FMI	Fault Code	Fault Description
12	4	13-2	Right Rear Rear Short to Ground on Release Solenoid Wire
		13-6	Right Rear Rear Short to Ground on Hold Solenoid Wire
	5	13-3	Right Rear Rear Open Circuit on Release Solenoid Wire
		13-4	Right Rear Rear Open Circuit on Common Wire
		13-7	Right Rear Rear Open Circuit on Hold Wire
13	3	17-1	Retarder Relay Short to Voltage or Open Circuit
	4	17-2	Retarder Relay Short to Ground
14	3	10-10	Common Side of Valves Shorted High
		10-9	Common Side of Valves - Stray Voltage Detected
		11-10	Common Side of Valves Shorted High
		11-9	Common Side of Valves - Stray Voltage Detected
	4	10-11	Common Side of Valves - Shorted to Ground
11-11		Common Side of Valves - Shorted to Ground	
18	2	14-8	ATC Valve Configuration error
	3	14-5	ATC Valve Solenoid Shorted to Voltage
	4	14-6	ATC Valve Solenoid Shorted to Ground
	5	14-7	ATC Valve Solenoid Open Circuit
23	14	17-10	ABS Warning Light Shorted or Open (2X only)
151	14	8	Inter-axle Differential Control Circuit
		17-12	Sensor Fault bit set. Drive Vehicle to Clear
231	2	14-12	ATC Engine Data Link Error, J1939
		17-3	ATC Engine Data Link Error, J1939
		17-4	ATC Engine Data Link Error, J1939
	12	15-9	ECU Internal Fault
249	2	14-12	ATC Engine Data Link Error, J1922

Eaton Tractor ABS (Continued)

PID/SID	FMI	Fault Code	Fault Description	
249	2	17-3	ATC Engine Data Link Error, J1922	
		17-4	ATC Engine Data Link Error, J1922	
251	2	16-11	High Differential Voltage Between Diagonals	
		3	16-2	Low Voltage on Diagonal 1
			16-6	Low Voltage on Diagonal 2
	4	16-10	Low Voltage on Switched Ignition Input	
		16-1	Excessive Voltage on Diagonal 1	
		16-5	Excessive Voltage on Diagonal 2	
	5	16-9	High Voltage on Switched Ignition Input	
		16-3	No Voltage Found on Diagonal 1	
		16-4	No Ground Found on Diagonal 1	
		16-7	No Voltage Found on Diagonal 2	
253	12	16-8	No Ground Found on Diagonal 2	
		15-2	ECU Internal Fault	
	13	15-4	ECU Internal Fault	
		15-3	ECU Internal Fault	
		15-8	ECU Internal Fault	
17-5	Tire Size Front to Rear Out of Ranger			
17-6	Tire Size Out of Ranger or Parameter Fault			
254	0	17-6	Tire Size Out of Ranger or Parameter Fault	
		15-5	ECU Internal Fault	
		15-6	ECU Internal Fault	
	2	15-7	ECU Internal Fault	
		12	15-1	ECU Internal Fault
			15-10	ECU Internal Fault
15-11	ECU Internal Fault			
-	-	1-1	System OK	
		17-7	Brake Switch not Pushed at the Power Cycle	
		17-8	ATC System Disable for Dynamometer Test	

MID 136 - Wabco Pneumatic Tractor ABS

Wabco Pneumatic Tractor ABS

PID/ SID	FMI	Fault Code	Fault Description
0	1, 8, 10	3+2	Left Front Steer Axle - Adjust Wheel Sensor
1	7	6+2	Left Front Steer Axle - Check for Damaged Tooth Wheel
	1, 8, 10	3+2	Left Front Steer Axle - Adjust Wheel Sensor
	2, 9, 11, 12	5+2	Left Front Steer Axle - Check for Tire Size Mismatch or Tooth Wheel Difference
	3, 4, 5, 6	4+2	Left Front Steer Axle - Check Sensor Resistance
2	1, 8, 10	3+1	Right front Steer Axle - Adjust Wheel Sensor
	2, 9, 11, 12	5+1	Right front Steer Axle - Check for Tire Size Mismatch or Tooth Wheel Difference
	3, 4, 5, 6	4+1	Right front Steer Axle - Check Sensor Resistance
	7	6+1	Right front Steer Axle - Check for Damaged Tooth Wheel
3	1,8, 10	3+4	Left Forward/Rear Tandem Drive Axle - Adjust Wheel Sensor
	2, 9, 11, 12	5+4	Left Forward/Rear Tandem Drive Axle - Check for Tire Size Mismatch or Tooth Wheel Difference
	3, 4, 5, 6	4+4	Left Forward/Rear Tandem Drive Axle - Check Sensor Resistance
	7	6+4	Left Forward/Rear Tandem Drive Axle - Check for Tire Size Mismatch or Tooth Wheel Difference
4	1, 8, 10	3+3	Right Forward/Rear tandem Drive Axle - Adjust Wheel Sensor
	2, 9, 11, 12	5+3	Right Forward/Rear tandem Drive Axle - Check for Tire Size Mismatch or Tooth Wheel Difference
	3, 4, 5, 6	4+3	Right Forward/Rear tandem Drive Axle - Check Sensor Resistance

Wabco Pneumatic Tractor ABS (Continued)

PID/ SID	FMI	Fault Code	Fault Description
4	7	6+3	Right Forward/Rear tandem Drive Axle - Check for Damaged Tooth Wheel
5	1, 8, 10	3+6	Left Rear/Rear Tandem Drive Axle - Adjust Wheel Sensor
	2, 9, 11, 12	5+6	Left Rear/Rear Tandem Drive Axle - Check for Tire Size Mismatch or Tooth Wheel Difference
	3, 4, 5, 6	4+6	Left Rear/Rear Tandem Drive Axle - Check Sensor Resistance
	7	6+6	Left Rear/Rear Tandem Drive Axle - Check for Tire Size Mismatch or Tooth Wheel Difference
6	1, 8, 10	3+5	Right Rear/Rear Tandem Drive Axle - Adjust Wheel Sensor
	2, 9, 11, 12	5+5	Right Rear/Rear Tandem Drive Axle - Check for Tire Size Mismatch or Tooth Wheel Difference
	3, 4, 5, 6	4+5	Right Rear/Rear Tandem Drive Axle - Check Sensor Resistance
	7	6+5	Right Rear/Rear Tandem Drive Axle - Check for Tire Size Mismatch or Tooth Wheel Difference
	7	3, 5, 6	2+2
8	3, 5, 6	2+1	Right front Steer Axle - Check ABS Modulator Valve
9	3, 5, 6	2+4	Left Forward/Rear Tandem Drive Axle - Check ABS Modulator Valve
10	3, 5, 6	2+3	Right Forward/Rear tandem Drive Axle - Check ABS Modulator Valve
11	3, 5, 6	2+6	Left Rear/Rear Tandem Drive Axle - Check ABS Modulator Valve
12	3, 5, 6	2+5	Right Rear/Rear Tandem Drive Axle - Check ABS Modulator Valve
13	3, 5, 6	7+3	Check Retarder Connection
14, 15	3, 5, 6	8+5	Check all ABS Valve and/or ATC Valve Ground Connections
	4	8+1	Check Vehicle Voltage

Wabco Pneumatic Tractor ABS (Continued)

PID/ SID	FMI	Fault Code	Fault Description
14, 15	7	8+3	Verify Accuracy of Blink Code and Clear from ECU Memory
18	3, 5, 6	7+2	Check ATC Valve
19	3, 5, 6	7+6	Verify Accuracy of Blink Code and Clear from ECU Memory
23	5	7+4	Check ABS Indicator Lamp Connections
231	2, 5, 6, 7, 8, 9, 10	7+1	Check for Proper Data Link Connection
	12	8+3	Exhaust Retarder May cause Instability
251	3, 14	8+3	Check Vehicle Voltage
253	2, 12	8+4	Verify all ECU Connections
254	8	7+1	Check for Proper Data Link Connection
	9	2+1	Right front Steer Axle - Check ABS Modulator Valve
	12	8+3	Internal Error
	13, 14	8+6	RSC, RSA Disabled
-	-	1+1	System OK

MID 136 - Wabco Hydraulic ABS

Wabco Hydraulic ABS

PID/SID	FMI	Fault Code	Fault Description
1	1	3+2	Left Front - Adjust Wheel Sensor
	2	5+2	Left Front - Check for Tire Size Mismatch or Tooth Wheel Difference
	2, 5	4+2	Left Front - Check Sensor Resistance
	7	6+2	Left Front - Check for Damaged Tooth Wheel
2	1	3+1	Right Front - Adjust Wheel Sensor
	2	5+1	Right Front - Check for Tire Size Mismatch or Tooth Wheel Difference
	2, 5	4+1	Right Front - Check Sensor Resistance
	7	6+1	Right Front - Check for Damaged Tooth Wheel
3	1	3+4	Left Rear - Adjust Wheel Sensor
	2	5+4	Left Rear - Check for Tire Size Mismatch or Tooth Wheel Difference
	2, 5	4+4	Left Rear - Check Sensor Resistance
	7	6+4	Left Rear - Check for Tire Size Mismatch or Tooth Wheel Difference
4	1	3+3	Right Rear - Adjust Wheel Sensor
	2	5+3	Right Rear - Check for Tire Size Mismatch or Tooth Wheel Difference
	2, 5	4+3	Right Rear - Check Sensor Resistance
	7	6+3	Right Rear - Check for Damaged Tooth Wheel
13	3, 5, 6	7+3	Check Retarder Connection

Wabco Hydraulic ABS (Continued)

PID/SID	FMI	Fault Code	Fault Description
23	5	7+4	Check ABS Indicator Lamp Connections
30	3, 5, 6, 7	7+8	Recirculation Pump
42	3, 5, 6	2+2	Left Front - Solenoid Inlet Valve
43	3, 5, 6	2+1	Right Front - Solenoid Inlet Valve
44	3, 5, 6	2+4	Left Rear - Solenoid Inlet Valve
45	3, 5, 6	2+3	Right Rear - Solenoid Inlet Valve
48	3, 5, 6	2+2	Left Front - Solenoid Outlet Valve
49	3, 5, 6	2+1	Right Front - Solenoid Outlet Valve
50	3, 5, 6	2+4	Left Rear - Solenoid Outlet Valve
51	3, 5, 6	2+3	Right Rear - Solenoid Outlet Valve
54	3, 4, 7	7+7	Recirculation Pump
55	2	2+7	Check Ground Connection
251	3	8+2	Check Vehicle Voltage
	4, 5	8+1	Check Vehicle Voltage
253	2	8+4	Tire Parameter
254	12	8+3	Tire Parameter
-	-	1+1	System OK

MID 137 - Bendix Trailer ABS

Bendix Trailer ABS

PID/SID	FMI	Fault Code	Fault Description
1	0	2-1	Sensor A - Sensor Air Gap Too Large
	8	2-2	Sensor A - Sensor Air Gap Too Large or Sensor Shorted
		2-4	Sensor A - Excessive Wheel Lock
		2-5	Sensor A - Intermittent Sensor Signal
	10	2-3	Sensor A - Noisy Signal, Check Tone Wheel
	12	2-6	Sensor A - Sensor Shorted or Open
2	0	3-1	Sensor B - Sensor Air Gap Too Large
	8	3-2	Sensor B - Sensor Air Gap Too Large or Sensor Shorted
		3-4	Sensor B - Excessive Wheel Lock
		3-5	Sensor B - Intermittent Sensor Signal
	10	3-3	Sensor B - Noisy Signal, Check Tone Wheel
12	3-6	Sensor B - Sensor Shorted or Open	
3	0	4-1	Sensor C - Sensor Air Gap Too Large
	8	4-2	Sensor C - Sensor Air Gap Too Large or Sensor Shorted
		4-4	Sensor C - Excessive Wheel Lock
		4-5	Sensor C - Intermittent Sensor Signal
	10	4-3	Sensor C - Noisy Signal, Check Tone Wheel
12	4-6	Sensor C - Sensor Shorted or Open	
4	0	5-1	Sensor D - Sensor Air Gap Too Large
	8	5-2	Sensor D - Sensor Air Gap Too Large or Sensor Shorted
		5-4	Sensor D - Excessive Wheel Lock
		5-5	Sensor D - Intermittent Sensor Signal
	10	5-3	Sensor D - Noisy Signal, Check Tone Wheel
12	5-6	Sensor D - Sensor Shorted or Open	
7	2	8-8	Valve A - System Configuration is Incorrect

Bendix Trailer ABS (Continued)

PID/SID	FMI	Fault Code	Fault Description
7	3	8-1	Valve A - Short Circuit from the Release Solenoid to Voltage
		8-5	Valve A - Short Circuit from the Hold Solenoid to Voltage
	4	8-2	Valve A - Short Circuit from the Release Solenoid to Ground
		8-6	Valve A - Short Circuit from the Hold to Ground
	5	8-3	Valve A - Open Circuit at the Release Solenoid
		8-4	Valve A - Open Circuit on the Common Line to Valve
8-7		Valve A - Open Circuit at the Hold Solenoid	
8	2	9-8	Valve B - System Configuration is Incorrect
	3	9-1	Valve B - Short Circuit from the Release Solenoid to Voltage
		9-5	Valve B - Short Circuit from the Hold Solenoid to Voltage
	4	9-2	Valve B - Short Circuit from the Release Solenoid to Ground
		9-6	Valve B - Short Circuit from the Hold to Ground
	5	9-3	Valve B - Open Circuit at the Release Solenoid
		9-4	Valve B - Open Circuit on the Common Line to Valve
9-7		Valve B - Open Circuit at the Hold Solenoid	
14	3	10-9	Common Side of Valve(s) - Stray Voltage Detected
		10-10	Common Side of Valve(s) - Shorted High
	4	10-11	Common Side of Valve(s) - Shorted to Ground
23	14	17-10	Warning Light Shorted High or J1587+ Shorted to Ground

Bendix Trailer ABS (Continued)

PID/ SID	FMI	Fault Code	Fault Description
30	12	15-10	ECU Internal Error
		15-11	ECU Internal Error
151	14	17-12	Sensor Signal Check Required. Pull Trailer or Turn Wheels one after the Other
251	1	16-1	Over Voltage on ECU Power Line
	2	16-2	Low Voltage on ECU Power Line
253	12	15-4	ECU Internal Error
	13	15-3	ECU Internal Error
254	2	15-4	ECU Internal Error
		15-7	ECU Internal Error
		15-9	ECU Internal Error
	12	15-1	ECU Internal Error
		15-2	ECU Internal Error
		15-6	ECU Internal Error
-	-	1-1	No Trouble Found

MID 137 - Eaton Trailer ABS

Eaton Trailer ABS

PID/SID	FMI	Fault Code	Fault Description
1	0	2-1	Sensor A - Sensor Air Gap Too Large
	8	2-2	Sensor A - Sensor Air Gap Too Large or Sensor Shorted
		2-4	Sensor A - Excessive Wheel Lock
		2-5	Sensor A - Intermittent Sensor Signal
	10	2-3	Sensor A - Noisy Signal, Check Tone Wheel
	12	2-6	Sensor A - Sensor Shorted or Open
2	0	3-1	Sensor B - Sensor Air Gap Too Large
	8	3-2	Sensor B - Sensor Air Gap Too Large or Sensor Shorted
		3-4	Sensor B - Excessive Wheel Lock
		3-5	Sensor B - Intermittent Sensor Signal
	10	3-3	Sensor B - Noisy Signal, Check Tone Wheel
12	3-6	Sensor B - Sensor Shorted or Open	
3	0	4-1	Sensor C - Sensor Air Gap Too Large
	8	4-2	Sensor C - Sensor Air Gap Too Large or Sensor Shorted
		4-4	Sensor C - Excessive Wheel Lock
		4-5	Sensor C - Intermittent Sensor Signal
	10	4-3	Sensor C - Noisy Signal, Check Tone Wheel
12	4-6	Sensor C - Sensor Shorted or Open	
4	0	5-1	Sensor D - Sensor Air Gap Too Large
	8	5-2	Sensor D - Sensor Air Gap Too Large or Sensor Shorted
		5-4	Sensor D - Excessive Wheel Lock
		5-5	Sensor D - Intermittent Sensor Signal
	10	5-3	Sensor D - Noisy Signal, Check Tone Wheel
12	5-6	Sensor D - Sensor Shorted or Open	
7	2	8-8	Valve A - System Configuration is Incorrect

Eaton Trailer ABS (Continued)

PID/SID	FMI	Fault Code	Fault Description	
7	3	8-1	Valve A - Short Circuit from the Release Solenoid to Voltage	
		8-5	Valve A - Short Circuit from the Hold Solenoid to Voltage	
	4	8-2	Valve A - Short Circuit from the Release Solenoid to Ground	
		8-6	Valve A - Short Circuit from the Hold to Ground	
	5	8-3	Valve A - Open Circuit at the Release Solenoid	
		8-4	Valve A - Open Circuit on the Common Line to Valve	
		8-7	Valve A - Open Circuit at the Hold Solenoid	
	8	2	9-8	Valve B - System Configuration is Incorrect
			3	9-1
9-5		Valve B - Short Circuit from the Hold Solenoid to Voltage		
4		9-2	Valve B - Short Circuit from the Release Solenoid to Ground	
		9-6	Valve B - Short Circuit from the Hold to Ground	
5		9-3	Valve B - Open Circuit at the Release Solenoid	
		9-4	Valve B - Open Circuit on the Common Line to Valve	
		9-7	Valve B - Open Circuit at the Hold Solenoid	
14		3	10-9	Common Side of Valve(s) - Stray Voltage Detected
			10-10	Common Side of Valve(s) - Shorted High
	4	10-11	Common Side of Valve(s) - Shorted to Ground	
23	14	17-10	Warning Light Shorted High or J1587+ Shorted to Ground	

Eaton Trailer ABS (Continued)

PID/ SID	FMI	Fault Code	Fault Description
30	12	15-10	ECU Internal Error
		15-11	ECU Internal Error
151	14	17-12	Sensor Signal Check Required. Pull Trailer or Turn Wheels one after the Other
251	1	16-1	Over Voltage on ECU Power Line
	2	16-2	Low Voltage on ECU Power Line
253	12	15-4	ECU Internal Error
	13	15-3	ECU Internal Error
254	2	15-4	ECU Internal Error
		15-7	ECU Internal Error
		15-9	ECU Internal Error
	12	15-1	ECU Internal Error
		15-2	ECU Internal Error
		15-6	ECU Internal Error
-	-	1-1	No Trouble Found

MID 137 - Haldex Trailer ABS

Haldex Trailer ABS

PID/SID	FMI	Fault Code	Fault Description	
1	2	22	Speed Sensor RED S1B Intermittent Input	
	5	2	Speed Sensor RED S1B Open/Short Circuit	
		4	Speed Sensor YEL S2B Open/Short Circuit	
		5	Speed Sensor BLU S3A Open/Short Circuit	
	13	12	Speed Sensor RED S1B Sensor Gap to Large	
		14	Speed Sensor YEL S2B Sensor Gap to Large	
		15	Speed Sensor BLU S3A Sensor Gap to Large	
	2	2	21	Speed Sensor RED S1A Intermittent Input
			23	Speed Sensor BLU S2A Intermittent Input
5		1	Speed Sensor RED S1A Open/Short Circuit	
		3	Speed Sensor BLU S2A Open/Short Circuit	
13		11	Speed Sensor RED S1A Sensor Gap to Large	
		13	Speed Sensor BLU S2A Sensor Gap to Large	
3	2	25	Speed Sensor BLU S3A Intermittent Input	
	5	6	Speed Sensor YEL S3B Open/Short Circuit	
	13	16	Speed Sensor YEL S3B Sensor Gap to Large	
4	5	4	Speed Sensor YEL S2B Open/Short Circuit	
7	7	40	Sensor Wiring Crossed Over Axle	
		42	BLU Valve Channel Slow Wheel Recovery	

Haldex Trailer ABS (Continued)

PID/SID	FMI	Fault Code	Fault Description
7	7	43	YEL Valve Channel Slow Wheel Recovery
8	7	41	BLU Valve Channel Slow Wheel Recovery
9	7	43	YEL Valve Channel Slow Wheel Recovery
22	8	20	Incorrect Exciter Ring Tooth Count
		14	Warning Lamp Signal From Device
23	5	35	Aux Analog CH2 Open/Short Circuit
24	13	C1	Sensor/Valve Configuration Error
42	3	81	RED Valve Channel Hold Short to B+
		82	BLU Valve Channel Hold Short to B+
		83	YEL Valve Channel Hold Short to B+
	4	71	RED Valve Channel Hold Short Circuit
		72	BLU Valve Channel Hold Short Circuit
		73	YEL Valve Channel Hold Short Circuit
	5	61	RED Valve Channel Hold Open Circuit
		62	BLU Valve Channel Hold Open Circuit
		63	YEL Valve Channel Hold Open Circuit
43	3	82	BLU Valve Channel Hold Short to B+
	4	72	BLU Valve Channel Hold Short Circuit
	5	62	BLU Valve Channel Hold Open Circuit
44	3	83	YEL Valve Channel Hold Short to B+
	4	73	YEL Valve Channel Hold Short Circuit
	5	63	YEL Valve Channel Dump Open Circuit
48	3	87	BLU Valve Channel Hold Short to B+
		88	BLU Valve Channel Hold Short to B+
		89	YEL Valve Channel Hold Short to B+
	4	77	RED Valve Channel Dump Short Circuit
		78	BLU Valve Channel Dump Short Circuit
		79	YEL Valve Channel Dump Short Circuit
	5	67	RED Valve Channel Dump Open Circuit
		68	BLU Valve Channel Dump Open Circuit

Haldex Trailer ABS (Continued)

PID/SID	FMI	Fault Code	Fault Description	
48	5	69	YEL Valve Channel Dump Open Circuit	
49	3	88	BLU Valve Channel Hold Short to B+	
		4	78	BLU Valve Channel Dump Short Circuit
		5	68	BLU Valve Channel Dump Open Circuit
50	3	89	YEL Valve Channel Hold Short to B+	
		4	79	YEL Valve Channel Dump Short Circuit
		5	69	YEL Valve Channel Dump Open Circuit
240	13	C0	Sensor/Valve Configuration Error	
		C2	Sensor/Valve Configuration Error	
251	3	92	High Power Supply Voltage to ABS ECU	
		4	90	Low Power Supply Voltage to ABS ECU
252	5	26	Speed Sensor YEL S3B Intermittent Input	
		30	Aux Digital CH 0 Open.Short Circuit	
		31	Aux Digital CH 1 Open.Short Circuit	
		32	Aux Digital CH 2 Open.Short Circuit	
		33	Aux Analog CH3 Open/Short Circuit	
		34	Aux Analog CH1 Open/Short Circuit	
254	12	80	Any Valve Channel Leakage Current	
		91	No Solenoid Voltage Defective ABS ECU	
		93	ABS Short Circuit Sum Error Defective ECU	
		99	ABS Check Sum Error Defective ECU	
		E0	Defective ABS ECU	
		E1	Defective ABS ECU	
		E2	Defective ABS ECU	
		E3	Defective ABS ECU	
		E4	Defective ABS ECU	
		E5	Defective ABS ECU	
		E6	Defective ABS ECU	
		E7	Defective ABS ECU	
		E8	Defective ABS ECU	
		E9	Defective ABS ECU	
EA	Defective ABS ECU			

Haldex Trailer ABS (Continued)

PID/SID	FMI	Fault Code	Fault Description
254	12	EB	Defective ABS ECU
		EC	Defective ABS ECU
		ED	Defective ABS ECU
		EE	Defective ABS ECU
		EF	Defective ABS ECU
	13	9A	Auxiliary Function Line 2 Configuration Error

MID 137 - Wabco Trailer ABS

Wabco Trailer ABS

PID/SID	FMI	Fault Code	Fault Description
3	5	3+5	BU1 Sensor Damaged or Cable Damaged
	7	3+7	BU1 Sensor Out of Adjustment
	10	3+10	BU1 Wheel Speed Erratic
4	5	4+5	YE1 Sensor Damaged or Cable Damaged
	7	4+7	YE1 Sensor Out of Adjustment
	10	4+10	YE1 Wheel Speed Erratic
5	5	5+5	BU2 Sensor Damaged or Cable Damaged
	7	5+7	BU2 Sensor Out of Adjustment
	10	5+10	BU2 Wheel Speed Erratic
6	5	6+5	YE2 Sensor Damaged or Cable Damaged
	7	6+7	YE2 Sensor Out of Adjustment
	10	6+10	YE2 Wheel Speed Erratic
9	3	9+3	Ext Valve (BU) Short to Power
	5	9+5	Ext Valve (BU) Open or Cable Damage
	6	9+6	Ext Valve (BU) Grounded or Cable Damage
	12	9+12	Ext Valve (BU) Short to Power
10	3	10+3	Ext Valve (YE) Short to Power
	5	10+5	Ext Valve (YE) Open or Cable Damage
	6	10+6	Ext Valve (YE) Grounded or Cable Damage
	12	10+12	Ext Valve (YE) Short to Power
14	4	14+4	Voltage Low, Power Relay
59	3	14+3	Power Supply Over voltage
	12	15+?	ECU Internal Failure
60	2	14+2	Unexpected System
61	12	15+12	ECU Internal Failure
62	9, 12	15+?	ECU Internal Failure
251	3	14+3	Power Supply Over voltage

Wabco Trailer ABS (Continued)

PID/SID	FMI	Fault Code	Fault Description
251	9, 12	15+?	ECU Internal Failure
252	2	15+?	Unexpected System
253	12	15+?	ECU Internal Failure
254	2, 12	15+?	ECU Internal Failure
-	-	0	System OK

MID 142 - Mack

Mack

PID/SID	FMI	Fault Code	Fault Description
6	4, 3	4-6	Tachometer Output
7	4, 3	4-7	Speedometer Output
10	4, 3	4-3	Auxiliary Output #1
11	4, 3	4-4	Auxiliary Output #2
32	7, 8	3-8	Transmission Spitter Position
77	4, 3	2-5	Front Drive Axle Temperature Sensor
78	4, 3	2-6	Rear Drive Temperature Sensor
84	1	N/A	Road Speed
91	4, 3	5-1	Throttle Position Sensor
96	4, 3	6-1	Fuel Level
100	1	N/A	Oil Pressure Sensor
110	0	N/A	Engine Coolant Temperature
151	1, 0, 8	4-8	Customer Defined Statement
	7, 8	3-8	Transmission Spitter Position
167	1, 0	7-5	Alternator Voltage
168	1	7-5	Battery Voltage
173	0	N/A	Exhaust Temperature Sensor
	4, 3	3-1	Exhaust Temperature Sensor
177	0	N/A	Transmission Temperature Sensor
	4, 3	2-4	Transmission Temperature Sensor
190	0	N/A	Engine Speed Sensor
216	12	6-9	Other ECU Affecting Operations
231	8	6-4	J1939 Link
	14	6-8	J1939 Link
232	4, 3	5-2	Throttle Position Sensor Reference Voltage
235	3	7-2	Parking Brake Switch
236	2	6-7	Power Relay
237	3	1-6	Starter Input
238	4, 3	5-3	Engine Shutdown Lamp/Alarm
239	4, 3	5-5	Electronic Malfunction Lamp
242	3	7-4	Speed Control RESUME Switch

Mack (Continued)

PID/SID	FMI	Fault Code	Fault Description
243	3	7-3	Speed Control SET Switch
246	4	7-1	Service Brake Switch
250	8	6-3	J1708/J1587 Link
254	4	9-2	Power Reset Without Key Switch
	8	7-7	Exhaust Temperature Reference
	14	9-1	Transport Protocol

MID 158 - Mack

Mack

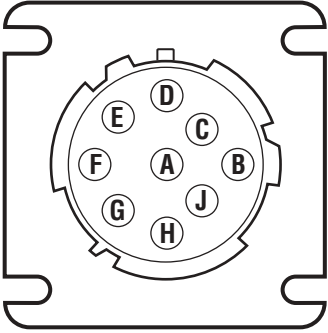
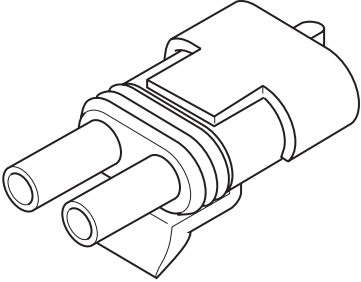
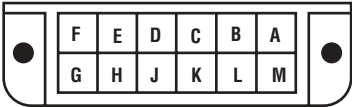
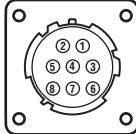
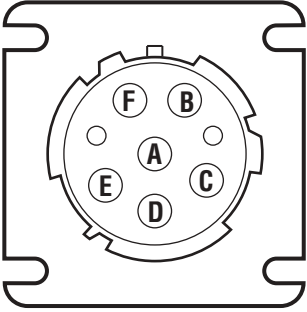
PID/SID	FMI	Fault Code	Fault Description
84	2, 4, 3, 5, 8, 11	4-1	Vehicle Speed sensor (VSS)

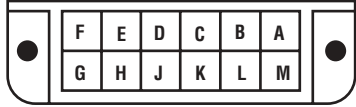
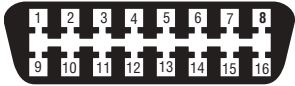
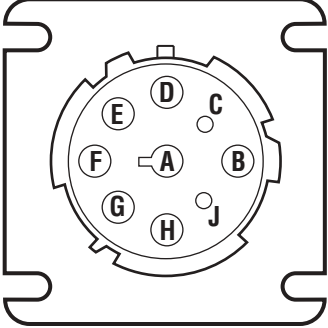
MID 219 - Eaton VORAD

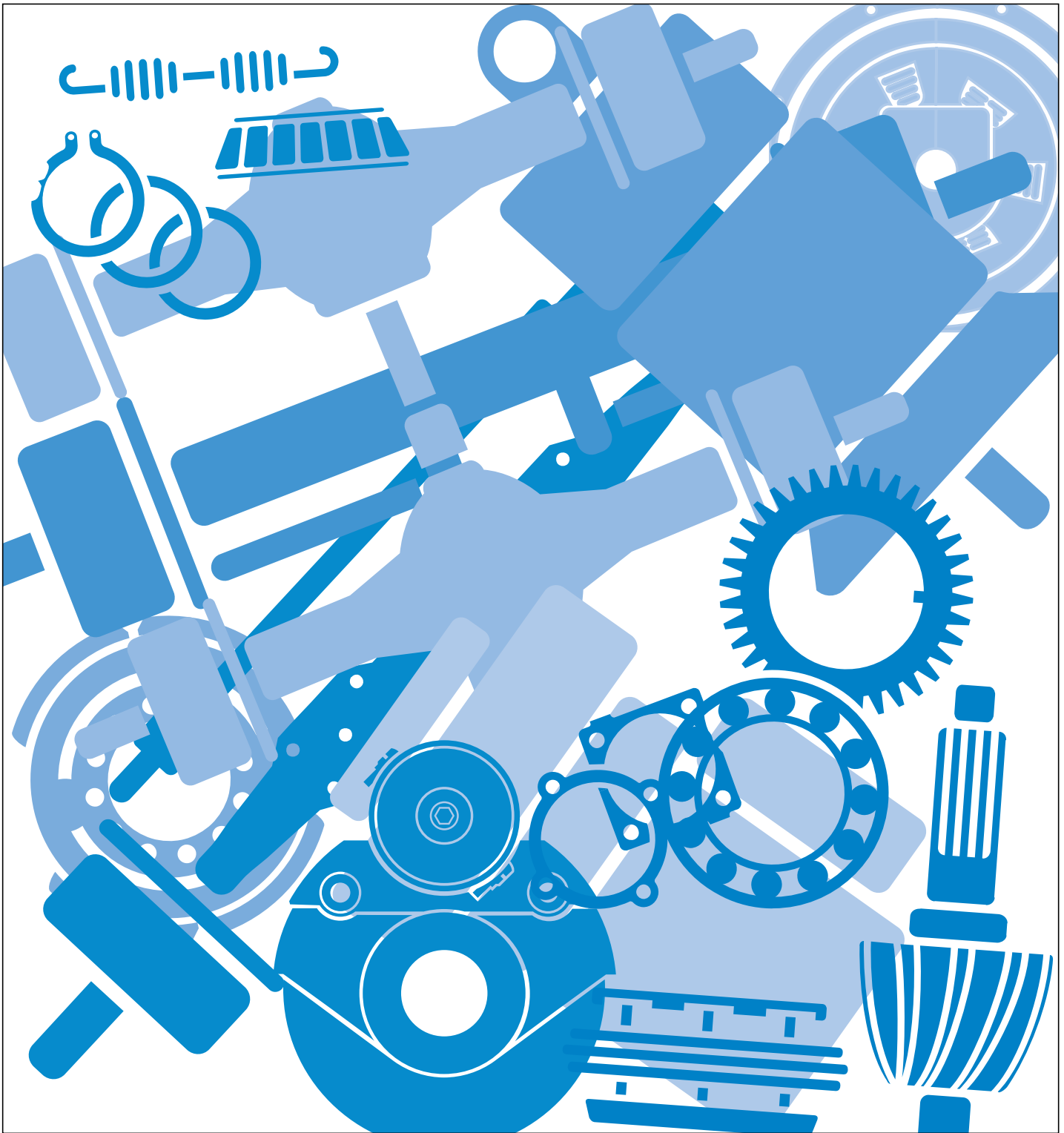
Eaton VORAD

PID/ SID	FMI	Fault Code	Fault Description
2	2, 12 & 14	14	Antenna
3	2	23	Brake Input
6	2	24	Speed Input
7	2	21	Right Turn Signal
8	2	22	Left Turn Signal
9	2, 4, 5 & 12	13	Driver Display Unit
10	2	15	Right Side Sensor
11	2	16	Left Side Sensor
231	2, 12 & 14	25	J-1939 Data Link
250	2	31	J-1587 Data Link
254	4 & 12	11	Central Processing Unit

Diagnostic Connectors

Year	Vehicle / Engine	Connector
Pre 1995	Caterpillar Engines	9-pin Deutsch (gray) 
	Cummins Engines	2-pin Packard 
	Detroit Diesel Engines	12-pin ALDL 
	International / Navistar Vehicles	8-pin Amp 
1995 to Present	All Vehicles	6-pin Deutsch 

Year	Vehicle / Engine	Connector
Pre 1997	GM Topkick Vehicle	12-pin ALDL 
1997 to Present	GM Topkick Vehicle	16-pin OBDII 
1998 to Present	All Vehicles	9-pin Deutsch (black) 



Copyright Eaton and Dana Corporation, 2003. EATON AND DANA CORPORATION hereby grants its customers, vendors, or distributors permission to freely copy, reproduce and/or distribute this document in printed format. THIS INFORMATION IS NOT INTENDED FOR SALE OR RE-SALE, AND THIS NOTICE MUST REMAIN ON ALL COPIES.



National Institute for
**AUTOMOTIVE
SERVICE
EXCELLENCE**

Roadranger[®]

MORE TIME ON THE ROAD.

The Roadranger[®] System is an unbeatable combination of the best products from Eaton and Dana – partnering to provide you the most advanced, most trouble-free drivetrain in the industry. And it's backed by the Roadrangers – the most experienced, most expert, most accessible drivetrain consultants in the business.

For spec'ing or service assistance, call 1-800-826-HELP (4357) 24 hours a day, 7 days a week, (Mexico: 01-800-826-HELP (4357)) for more time on the road. Or visit our web site at www.roadranger.com.



One Great Drivetrain from Two Great Companies

APMT-1234 2/04 PDF
Printed in USA